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ABSTRACT

This collection contains reports of 22 environmental study projects conducted by junior and senior students in a North Carolina high school. The scope of the projects covered total community service and sought to emphasize the students' roles as useful participants in the community. Fire, postal, health, and school services were surveyed, in addition to such environmental concerns as salt marsh conservation and food production. A related document is SE 016 930. (LS)

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16 929

FOREWORD

THIS COLLECTION OF PAPERS REPORTS THE PROJECT WORK OF JUNIOR AND SENIOR STUDENTS IN THE ENVIRONMENTAL STUDIES PROJECT (ESP) AT WEST CARTERET HIGH SCHOOL IN CARTERET COUNTY, NORTH CAROLINA.

OUR GOAL IS TO DEFINE ENVIRONMENT AS THE TOTAL COMMUNITY OF THE STUDENT INSIDE AND BEYOND THE SCHOOL AND TO EXTEND THE EDUCATIONAL EXPERIENCE OF STUDENTS INTO THE TOTAL COMMUNITY.

OUR INTENT IS TO SHOW THE WAYS AND MEANS BY WHICH STUDENTS IN ESP CONDUCT RESEARCH AND SERVICE PROJECTS IN THEIR COMMUNITY.

OUR MESSAGE IS THE SUCCESSES AND FAILURES OF STUDENTS IN ENDEAVORING TO LEARN MORE ABOUT THEIR TOTAL COMMUNITY AND TO INFLUENCE THE ACTIVITIES OF THE COMMUNITY.

OUR HOPE IS THAT THE SCHOOL AND THE COMMUNITY, WHICH ESP SEES AS INSEPARABLE, WILL RECOGNIZE THE IMPORTANCE OF THE STUDENTS' ROLE, NOT AS FUTURE CITIZENS ONLY, BUT AS CURRENTLY ACTIVE AND USEFUL PARTICIPANTS IN THEIR COMMUNITY.

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OF
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Gail Anderson

A RESEARCH STUDY
OF
THE CAPE CARTERET
VOLUNTEER FIRE DEPARTMENT

AN ENVIRONMENTAL STUDIES PROJECT

(ESP)

BY GAIL ANDERSON

MARCH 1973

THE CAPE CARTERET VOLUNTEER FIRE DEPARTMENT

BY

Gail Anderson

ABSTRACT. This project was an effort to find out how well the town of Cape Carteret is protected by the volunteer fire department. I also wanted to find out how the residents of the town felt about the department.

The first step I took after writing my project proposal was to write an outline of an interview. Then I made an appointment with a member of the fire department. I took a tour of the fire station and got all of the information on the department that I needed at the time.

Next, I wanted to find out the opinions of the residents. Therefore, I designed a survey that would answer the questions I had for the residents. After polling a majority of the residents, I compiled the results of the survey. The results indicated that the residents were satisfied with the department. In giving the survey, however, I realized that the residents knew very little about the department. They seemed to have little concern and a lack of awareness of the fire department which voluntarily protects them. I then had another interview with two members of the department to answer my final questions. I compiled all of my information, statistics and results in the form of a written paper. Copies of this paper will be presented to the fire department members themselves and to the citizens of Cape Carteret.

The community which the Cape Carteret Volunteer Fire Department protects consists of two housing developments. There are also four stores, an elementary school, and a country club. The homes are not all occupied. Many of them are used for summer homes. Only about sixty percent of the residents are permanent.

A fire in this town is reported by telephoning one of the head members of the Fire Department. They have a triangle system where the one who gets the call in turn calls two people until everyone is notified, and then the siren rings for seven minutes.

The main concern of these fire fighters is saving lives first, and saving property, second. Every fire is judged individually. The fire chief, Steve Blucher decides how to handle each fire.

The members of the department include thirteen active men, four active women and twenty-one honorary members. They have meetings the first Thursday of each month. The fire department is headed by the fire chief, Steve Blucher; the officers, Pat Ennis, President; Leo Reece, Vice President; Dooley Ennis, Secretary; and Ruth Bartlett, Treasurer.

In the daytime the women are the only fire fighters. In the evening and night the men are there to take care of the fires. Cape Carteret is only one mile in length, but the department's district covers twenty square miles. They receive

mutual aid from Cedar Point, Bogue Field and others they call. If needed, Swansboro assists, but they cannot use all of their equipment in case a fire should occur in their own district.

The members of the department are very well trained for a volunteer department. They attend fire fighting schools in Wilmington during Christmastime; in Wilson, twice a year; and at Camp Lejeune in the Fall. They also attend a school in Kinston and any other County Fire Association sponsored school.

The members have practice regularly. They have a fire drill once a month. They have old buildings that are donated to them to burn. For practice with their oxygen equipment, they walk around in the house filled with smoke and then they put the fire out.

Their equipment consists of two pumpers, and one tanker. They have no fire hydrants, but carry their water supply in their trucks. They get this water from a local pond. They carry a total of 1,750 gallons of water in the trucks. The first truck is a 1945 high pressure pumper with 800 pounds of pressure per square inch. The second is a tanker; it has 120 pounds of pressure per square inch. The third, a 1948 pumper, has 150 pounds per square inch. They also carry foam extinguishers, old oxygen breathing apparatus, and new air packs.

Emerald Isle is, at present, being protected by Cape Carteret until they establish a fire department of their own. Bogue Field and Emerald Isle use fire hydrants.

The department is financed by the county, which gives them five hundred dollars a year, and the city, which gives them one thousand dollars a year. They also receive donations from individuals. The members of the department raise money themselves by conducting two chicken fries each summer, and turkey shoots which start in the fall and last until Christmas. If and when they need extra money they have other fund raising projects like bake sales. Their expenditures from September 2, 1971, through September 6, 1972, were $1,137.87.

The fires that occured during the year of 1972 were as follows:

brush fires (major)	eight
house fires	two
trailer fires	two
car fires	two
barn fires	three
false alarms	one

I wanted to find out how the residents of Cape Carteret felt about their fire department, and their amount of knowledge of it. I also wanted to know of their concern about prevention of fires in their own homes. I constructed a survey and polled a majority of the residents.

The results indicate that most people feel fairly secure with the protection of the department. They feel the men can handle the fires a little better than the women. But they feel

the women can do a sufficient job. Most people have informed their children about how to report a fire. An even larger majority have no planned fire escape. Most people have adequate fire insurance. Most of the people (too many) were not well enough informed and acquainted with the fire department, their background and training, and efficiency of the members themselves. But most people felt the fire department is a good one.

In conclusion, most of the residents of Cape Carteret consider the fire department to be a good one. They get enough money, and if they don't, they try to raise it through bake sales and other projects. They would like to have more volunteers, but they aren't absolutely necessary. For the size of Cape Carteret, our fire department is more than efficient. I would rate them as a good fire department myself.

If Cape Carteret grows a lot within the next few years, they might need enlargement. But it is not likely it will grow that much. The only problem that needs emphasis is the lack of awareness of the residents, who didn't have that much knowledge about the department. In giving the survey, they learned a little. I hope the results of this project will serve to better educate the citizens about their fire department.

SURVEY QUESTIONNAIRE

CAPE CARTERET FIRE DEPARTMENT

1. Do you as a resident feel protected against the out-break of fire?

very secure	22%	insecure	7%
secure	71%	very insecure	0%

2. Do you feel better protected in the daytime or at night?

day	18%	night	50%
same	32%		

3. Do your children (if any) know how to report a fire if an emergency situation arises?

yes	57%	no	29%
Have no children	14%		

4. Does your family have a planned fire escape?

yes	34%	no	66%

5. Do you have adequate fire insurance?

yes	80%	no	20%

6. Are you aware of the structure of the department and the background of the volunteers?

yes	48%	somewhat	29%
no	23%		

7. How would you rate the fire department's equipment?

excellent	20%	adequate	22%
good	25%	needs improvement	8%
poor		no reply	25%

8. How would you rate the fire department's personnel?

excellent	31%	adequate	17%
good	25%	need improvement	14%
poor		no reply	13%

9. How would you rate the fire department's efficiency?

excellent	28%	adequate	8%
good	31%	needs improvement	11%
poor		no reply	22%

10. How would you rate the Cape Carteret Volunteer Fire Department as a whole?

excellent	20%	adequate	11%
good	48%	needs improvement	11%
poor		no reply	10%

ABANDONED CAR SURVEY

Mike Mayo
Steve Mehan

ABANDONED CAR SURVEY

by

Mike Mayo
Steve Mehan

ABSTRACT. This project was an attempt to locate the abandoned and junked cars in Carteret County. It was hoped that this effort would result in the removal of these hulks from the landscape.

The first step in the project was an interview with Mr. Ken Newsom, a county commissioner interested in the environment. He informed us of laws concerning junked cars and their removal, added more information as to the great extent of the problem in our county, and suggested mapping the locations of junked cars in Carteret County. We next obtained a map of the county.

We proceeded to survey the county at random intervals, driving about the county on field trip days, and marking down the locations and numbers of these abandoned cars. We covered the western part of the county. Some East Carteret ESP students covered the county east of the Newport River, but we do not have their data. The total project took about six months.

An article in Readers Digest provided us with information about abandoned car laws in other states. We learned, in addition, that our county has designated part of an acre at the Newport Land-Fill site to be used for storage of junked automobiles. When these accumulate, a salvage firm is supposed to compact up to 300 cars per week.

We later talked to county commissioner, Mr. Tom Temple, and learned more about North Carolina laws concerning junked cars. If a car remains on state property for 48 hours, it is considered abandoned, and is towed to a state yard, with two weeks given for the car to be claimed. Unclaimed cars are hauled to junk yards. Problems are that owners strip off license plates and all means of identification, so that the ownership can not be traced. Also there is no apparent way to confiscate junked cars on private property.

We prepared the junked car map requested by commissioner Newsom and mailed it to him. In addition, the report of the project was written up and is available for distribution. There were nearly a hundred junked-abandoned cars in the eastern part of the county alone. Evidently the state law is not enforced since most of the cars we located on state property are still there.

A weekly article written about ESP activities in the local paper reported information about the project and encouraged citizens to dispose of junked cars properly. We provided the ESP phone number for persons to call if they needed more information about junked cars. Only two persons have called...one seeking information, and the other complimenting our endeavor.

CENSUS OF DUCK SPECIES IN A MARITIME POND COMMUNITY

Ginger Lewis

CENSUS OF DUCK SPECIES IN A MARITIME POND COMMUNITY

by

Ginger Lewis

ABSTRACT. This project was done in an attempt to take a census of duck populations moving in and out of a small pond community located in Fort Macon State Park.

The project was begun with help from Mr. C. J. Spears who has conducted studies concerning ducks and other birds. He suggested this project on duck censuses and helped me to locate a pond that was secluded and well protected. Mr. Spears also helped with the identification of several species.

The study included a period of three months from mid-January to mid-April, 1973. Observations were recorded on a data sheet which included the number of different species observed, the number of males and females of each species (when possible), the total number of all ducks present, and the time, date and general remarks.

While the sampling was only at weekly intervals, certain trends could be noted from the data.

1. Green-Winged Teal appear to winter-over in Carteret County as indicated by their large numbers during January, and are among the first species to move northward during early spring.

2. Following extreme weather, ducks seek the sanctuary of small protected ponds, or seek an area where an available food source is located.

3. Ringed-Necked, Black, Wood and Canvasback ducks and Blue-Winged Teal appear to be migrating throughout Carteret County during late February to early April.

4. Most of these ducks have moved out of our area by late April.

When this project was concluded, it was written up as a research paper with the help of Mrs. Spitsbergen. It also was given to the Marine Science class in a short oral presentation.

ESP
YEARBOOK PHOTOGRAPHER

Steve Mehan

ESP
YEARBOOK PHOTOGRAPHER

Steve Mehan

This project grew out of a yearning to learn more about photography, and to become more proficient in my dark room procedures. Previous to this project, I had only used a Ricoh 35mm single lens reflex camera for project work. But due to the popularity of this type of camera I was forced into using a Yashica 120mm camera (twin lens reflex) which is of entirely different construction and is more difficult to use. But I have learned to like it and have gotten to the point where I nearly prefer it; at least it's easier to obtain, since there seems to be very little demand for this kind of camera.

In this work I have taken candid shots of ESP students at work (and at play). Also, I have tried to photograph the student teachers at work in Newport School. Photography work for the Revere was also included. On the following pages are some typical ESP students, caught off guard by "candid camera", in various activities which occurred during the last few weeks of the school year.

FIRE-FIGHTING EFFECTIVENESS IN CARTERET COUNTY

Jim Ervin
Steve Burr
Milton Pratt

FIRE-FIGHTING EFFECTIVENESS IN CARTERET COUNTY

by

Jim Ervin
Steve Burr
Milton Pratt

ABSTRACT. This project was done to give the citizens of Carteret County and the students of the Environmental Studies Project insights into the services offered by their fire departments and a better idea of the complicated nature of the work and procedures firemen must go through daily.

Getting this project done was a task because of the difficulties in getting up with the people involved. These included county commissioners, fire chiefs and volunteers of the various fire departments. Also, for some unexplainable reason, at first several of the fire department personnel hesitated to cooperate with us or to allow us access to their equipment and records. Later in the year there was a gradual increase in cooperation and we began to get more information. Some of the fire chiefs were very helpful and gave us a great deal of information. Others ... well, we can say that they gave us information, but little else.

In an effort to improve the communications between our project group and the fire department personnel we decided to try another approach. We found that when we wrote a survey (see attached sheet), seeking fire-fighting information, and left the sheets at the fire stations, the response was far better than when questions were asked directly of the firemen. Other methods may not have worked as well as the survey which asked questions as to how the fire departments were financed, what their equipment was, how many firemen were in each station and what were the worst and most common fires in the county. This meant that the fire department personnel had to check records dating back several years (1971-72 & 73). After about two weeks we returned to the stations to pick up the surveys. Using the information from the surveys and from talking to firemen, etc., we analyzed the fire fighting situation in Carteret

County. In Addition, we arranged for films on firefighting to be shown to the ESP class.

We found that many of the smaller stations in the eastern part of the county were undermanned, underequipped, and poorly financed. Older stations like Morehead City, Beaufort, and Newport were not really in bad shape as far as money, equipment, etc. were concerned; and can adequately put out or extinguish fires. At the present rate of population growth in the county there will be a great need for new and better equipment within the next five years. We feel that the present system is fairly adequate to accommodate any fires which may occur in the next several years. Hopefully by 1980 facilities already will have been built to handle future needs.

Our project advisor was Mr. Grady Ormsby, without whom we could not have completed the project paper and seminar on the subject that we gave. Our seminar reported to the class the information we had gathered, and included a movie film made by our project group on a typical fire-fighting training day with members of the fire fighting departments in Carteret County.

SAMPLE SURVEY SHEET

NAME OF DEPARTMENT _____
NAME OF CHIEF _____
NAME OF PERSON INTERVIEWED _____
NUMBER OF PAID FIREMEN _____ VOLUNTEERS _____
FUNDING
AMOUNT OF YEARLY BUDGET _____
AMOUNT FROM CITY SOURCES _____
AMOUNT FROM COUNTY SOURCES _____
AMOUNT FROM STATE SOURCES _____
AMOUNT FROM FEDERAL SOURCES _____
DONATIONS, FUND RAISING, ETC. _____

FIRE RECORDS: MONTHLY RECORD OF FIRES (LOCATION, TIME, COST, ETC.)

EQUIPMENT INVENTORY:

EQUIPMENT NEEDS:

HARBOR OF REFUGE IN CALICO CREEK

Calvin C. J. Jones

HARBOR OF REFUGE IN CALICO CREEK

by

Calvin C. J. Jones

ABSTRACT. My primary goals in doing this project were to get the environment of Calico Creek cleaned up. The whole shoreline of the creek from 13th Street to the head of the creek is covered with discarded garbage, and I wanted to clean up this ugly sight. I knew that the Corps of Engineers was considering dumping dredge spoils on the shore line to be a fill-area. This would cover the present garbage.

At first I did not contact anybody. Then, Mrs. Beth Taylor (ESP teacher) told me of a public meeting at City Hall, and she asked me if I would go to represent my opinion on the idea of a harbor of refuge in Calico Creek, being considered at the meeting. Before the meeting I contacted Mr. Jim Brown, chief of dredge and fill operations with the North Carolina Department of Economic and Natural Resources, and asked him to speak to the ESP class about the Harbor of Refuge project in Calico Creek. From his talk, I learned that one result of a harbor of refuge would be to change the shallow water body of Calico Creek into a navigable channel so that large boats could get in and out without waiting on the tides. This would enable the Black people of the community on Calico Creek to make a living from oystering, fishing and shrimping, while other Blacks could operate sport fishing boats right out of Calico Creek. There could be seafoood processing plants built on Calico Creek where seafood could be canned or processed for later use or marketing. At present, there is only one Black owned motel in the community. With deeper water this business could be expanded. Docks could be constructed to serve commercial and recreational vessels. In addition, there is a potential and a need for the development of swimming and picnic areas on the creek.

My information came from a variety of sources. Morehead City Commissioners, Mr. Nick Galantis and Mr. W.C. Horton (a member of the Black community) helped me. Mr. Galantis suggested that I write posters to encourage people to come to the meeting on the harbor of refuge project. I put these posters up in my community, and as a result a surprisingly large group from the Black community attended (40-50 people).

Mr. Horton shared with me his knowledge on the history of Calico Creek and the oyster industry there. Several letters from him (included here) greatly helped me. At the harbor of refuge meeting, I learned more from the Corps of Engineers people, and was asked to give my opinion on the project. After the meeting I wrote to N.C. Congressman, W.B. Jones (see letter) asking him for his help in supporting this project. He replied (see letter). Soon after I received other information on the project from the Corps of Engineers office.

I'm still working on this project and currently am working by myself. The ESP staff has helped me in a lot of ways by telling me of this project, where to get the material, and the people to contact. This never would have happened without them and I'm grateful for it. While doing this project I found lots of important people who were interested in this project even before I became involved in it.

My project has done and still is doing a lot for me. I love to help people in my community because I interview people who I know, and talk to them about how they feel about this project, and I sit with them and I can tell by their feelings that they are very much concerned about it. I think I'm helping them in a small way by trying to get this project started.

After completion of my project my plans are to make information available to the Department of Natural and Economic Resources, to the North Carolina Division of Commercial and Sports Fisheries, to the Morehead City Commissioners and the the U.S. Corps of Engineers.

DEPARTMENT OF THE ARMY
WILMINGTON DISTRICT. CORPS OF ENGINEERS
P. O. BOX 1890
WILMINGTON. NORTH CAROLINA 28401

24 October 1972

Honorable Walter B. Jones
House of Representatives
Washington, D. C. 20515

Dear Mr. Jones:

Thank you for your letter of 16 October 1972 concerning further consideration being given to construct a new harbor of refuge in Calico Creek along the northern side of Morehead City in Carteret County, North Carolina, and for the copy of a letter from Morehead City Town Commissioner Nick Galantis concerning the harbor.

One fact that was not included in my 17 April 1972 letter to you about the harbor of refuge in Calico Creek is that our 1971 harbor study did not find the project justifiable. Costs were estimated at $560,000 to dredge the two-mile-long channel and basins, acquire and dike above-water disposal areas, and provide navigation aids. Annual costs for interest and amortization on the initial investment and costs for maintaining project depths, dikes, and navigation aids were estimated at $41,500. Benefits were estimated at $13,000 annually from the elimination of costs for moving vessels to a safe haven and preventing damages that could occur to vessels moored in an unprotected area. A total of 106 vessels consisting of ocean and sound menhaden vessels, commercial trawlers, and charter fishing boats were evaluated.

In view of the disparity between benefits and costs, as determined in our 1971 study, it is doubtful that additional studies would develop savings sufficient to justify the project. Consequently, no further consideration is being given to the construction of a harbor of refuge in Calico Creek.

Please let me know if you need any other information concerning this matter.

Sincerely yours,

ALBERT C. COSTANZO
Colonel, Corps of Engineers
District Engineer

DEPARTMENT OF THE ARMY
WILMINGTON DISTRICT. CORPS OF ENGINEERS
P. O. BOX 1890
WILMINGTON. NORTH CAROLINA 28401

21 December 1972

Honorable Walter B. Jones
House of Representatives
Washington, D. C. 20515

Dear Mr. Jones:

Thank you for the 14 December 1972 letter acknowledging our telephonic request earlier that day for any information on your request to the Federal Aviation Administration about possible hazards that high-masted vessels moored in Town Creek Refuge Harbor might present to aircraft using the airport at Beaufort, North Carolina. Also, thank you for the copy of the letter you received from FAA.

The information furnished us will be used to support your request for another study to determine the feasibility of establishing a harbor of refuge in Calico Creek along the northern side of Morehead City just west of Beaufort, North Carolina.

I will be glad to inform you of our progress in obtaining additional funds for a more in-depth study of the Calico Creek Harbor of Refuge.

Sincerely yours,

ALBERT C. COSTANZO
Colonel, Corps of Engineers
District Engineer

Copy furnished:

Honorable Walter B. Jones
Representative in Congress
Farmville, N. C. 27828

WALTER B. JONES
1ST DISTRICT, NORTH CAROLINA

TELEPHONE: CODE 202: 225-3101

FLOYD J. LUPTON
ADMINISTRATIVE ASSISTANT

COMMITTEES:
AGRICULTURE
MERCHANT MARINE
AND FISHERIES

Congress of the United States
House of Representatives
Washington, D.C. 20515

January 25, 1973

Mr. Calvin B. Jones
Environmental Studies Project Title III ESEA
West Carteret High School
Morehead City, North Carolina 28557

Dear Mr. Jones:

Thank you for your nice letter of January 22 and your expression of interest in the construction of a Harbor of Refuge in Calico Creek.

I have been intensely interested in the construction of this project since August, 1971, and have a rather large file covering this project. Additionally, I have coordinated my efforts with local citizens and your County Board of Commissioners in an effort to make this project a reality. It is quite apparent that we have been delayed primarily due to the existence of the Town Creek Harbor, which is inconvenient to commercial fishermen and other vessel owners. The U. S. Army Corps of Engineers determines the eligibility of that project based upon a cost-benefit ratio, and the attached correspondence will indicate that this ratio was inadequate as results of a 1971 study indicated.

I have continued my efforts and have established the possibility of a hazard in the Town Creek Harbor because of high-masted vessels which could present problems to landing and departing aircraft at the Beaufort Airport. This was apparently sufficient to justify a second study, and attached correspondence will also indicate that an effort is being made by the Corps to secure adequate funds for this study.

Your letter was well-written and will provide information which I am forwarding directly to the Corps of Engineers. Again, I wish to thank you for your expression of interest in this matter.

With best personal regards, I am

Sincerely,

Walter B Jones

Walter B. Jones
Member of Congress

WBJ:Lsa
Attachments

HISTORICAL HIGHWAY MARKERS

Ginger Lewis
Bonnie Baysden

HISTORICAL HIGHWAY MARKERS

by

Ginger Lewis & Bonnie Baysden

This project was done in an attempt to photograph and learn more about the historical signs.

To begin we wrote to the Highway and Archives Department in Raleigh and received a booklet that had all the signs recorded up until 1964. They also sent us a pamphlet telling about the signs. It told who decided what was important enough to be marked, how it was decided, how long it takes to put a sign up, and how the location of the sign is decided.

We also talked to Mrs. Shirley Babcock who gave us more information about the signs that were already up and where they were trying to get others erected.

We learned that there are different types of highway markers. One type is an area marker. These markers often show maps; they emphasize a number of historical matters. They are erected at special pull-off spots or roadside parks such as the area marker of Fort Macon, located near the City Park. Regular markers are numbered and are smaller, briefer, and supposedly put where it is easy to read them or where there is a place to pull off. Also there are special markers which are not numbered. In our district, which consists of five counties, there are eight special markers, seven of which are in Carteret County.

From our research we have learned that the Historical Marker Program is genuinely concerned with correct historical facts and the interest of the public. Also we learned that Carteret County is a very historical area, especially the town of Beaufort.

HISTORICAL ROAD MAP OF CARTERET COUNTY

Wayne Beasley
Mary Ann Baysden

HISTORICAL ROAD MAP OF CARTERET COUNTY

by

Wayne Beasley, Mary Ann Baysden

This project is an effort to display the historical landmarks of Carteret County in the form of a road map.

This project was begun at the suggestion of Mrs. Jean Kell, Beaufort, member of the Beaufort Historical Association. She supplied us with a local map of Beaufort on which old homes were located.

We have received assistance from Mr. George Ball, lawyer, Morehead City, Mr. J.L. Seaman, Morehead City, James Willis, Register of Deeds, Beaufort and Mr. And Mrs. L.J. Norris, Sr., Morehead City.

We have received numerous maps of the county. We will take these maps, put them together, and come up with one big map. On the map will be old homes, road markers, landmarks, and transportation routes.

When all our information is compiled it will be turned over to the Beaufort Historical Association in care of Mrs. Kell, then it will be turned over to the State Agriculture Department to be made into a full size color map.

MOBILE HOMES IN CARTERET COUNTY

John Renfrow
Randall Parker

MOBILE HOMES IN CARTERET COUNTY

by

John Renfrow
Randall Parker

ABSTRACT. This project was an effort to discover how the mobile home industry has effected the economy of Carteret County. We wanted to know if the negative ecological view we had of trailers was offset by an economic contribution to the county.

In doing this project we wanted to learn how the production of homes in our community has effected local people's lives.

Most of our information was gained by interviewing people involved in the actual marketing of mobile homes.

The price range for mobile homes is from $3,500 to $17,000. The most popular or average mobile home costs from $5,000 to $6,000. There are seven dealers in Morehead and numerous others throughout the county.

The Conners plant in Newport operates on an assembly line and is capable of turning out a completed trailer every forty-five minutes. They employ approximately 110 employees.

We conclude that the mobile home industry is an asset to the economy of the county. Although they are a plus to the economy of the county, they do little to beautify the landscape.

We contacted Wallace Conner of Conner Mobile Homes, Inc. We also talked to a repair and service shop, and a variety of mobile home brokers. These people helped us considerably and were a great asset to our project.

The ESP staff helped us considerably, especially Mrs. Robert Windsor, who assisted with our project and without her suggestions this project would have been considerably handicapped.

We discovered that there are 144 mobile home parks in Carteret County with more than 30 trailers contained in each park. Therefore, many consumers are housed in mobile homes and contribute to our retail economy.

RESEARCH AND COMMERCIAL EFFORTS ON THE ATLANTIC MENHADEN (BREVOORTIA TYRANNUS) IN CARTERET COUNTY

Barry West

RESEARCH AND COMMERCIAL EFFORTS ON THE ATLANTIC MENHADEN (BREVOORTIA TYRANNUS) IN CARTERET COUNTY

Barry West
Environmental Studies Project
West Carteret High School
Morehead City, North Carolina
March 22, 1973

Contents

ACKNOWLEDGEMENTS: In reference to the information that I acquired from NOAA, I would like to specifically thank Mr. John Reintjes for his whole-hearted cooperation, which helped to make this report possible.

RESEARCH AND COMMERCIAL EFFORTS ON THE ATLANTIC MENHADEN (BREVOORTIA TYRANNUS) IN CARTERET COUNTY

General Information

A description of the species. The menhaden common to North Carolina waters is the species Brevoortia tyrannus. This is a relatively small fish, with a fork length of around 200 to 300 millimeters at the adult size. It is similar to, and often mistaken for, the alewife and the shad. Other species on the East and Gulf coasts are B. smithi, B. patronus, and B. gunteri. The genus is very cosmopolitan, and wherever distributed is an important commercial fish. B. tyrannus is the most important species to commercial fisheries on our coast.

General distribution in coastal North Carolina. The distribution of this species depends upon the season of the year, the age of the fish, and on spawning and migratory habits. During the fall, spring and summer the young fish are found mostly in the sounds/estuarine areas of our coast. During the winter the maturing young and adults undergo extensive migrations along the Atlantic seaboard. It is during the late fall of the year that the migrating fish can be found in greatest numbers off our coast. During this time the commercial fisheries reaches its peak.

Commercial efforts in Carteret County. The importance of the menhaden can be shown clearly by the number of fish factories located in Carteret County alone. For processing of these fish in Carteret there are three menhaden plants. The first, Potter's Fish Factory, owned by Mr. William Potter, is located at the east end of Front Street in Beaufort. The second, Smith's Factory, is located at the west end of Beaufort, near the Beaufort airport, and is owned by Mr. Harvey Smith. The third one, Haynie Products, Inc., is owned by Mr. Haynie, and is located across the highway from Carteret General Hospital.

NOAA, Federal agency researching menhaden. The Federal government also has shown considerable interest in this commercially valuable fish, and has expanded the research branch of NOAA

(National Oceanic and Atmospheric Administration) into the field of menhaden research. The local branch of this agency, the National Marine Fisheries Laboratory (NMF) on Piver's Island, is under the current leadership of Dr. T.R. Rice. Some of the research efforts conducted at NMF on this fish, for example, are tagging, mapping of migrations, population dynamics, schooling and other possible uses for this species.

The facilities at NMF employ a total staff of 87 persons including scientists, maintenance, and part-time help. The large building complex houses the offices of the research staff and the research facilities. Numerous salt water tanks are available for holding fish and for studying behavioral patterns of the species. Salinity, temperature and oxygen recording devices for studying reactions of the fish to environmental conditions, and many other specialized instruments for studying and analyzing menhaden populations also are used in the laboratory research. NMF has a small fleet of boats (Picture A) of small size which are used for sampling fish. Also investigated at NMF is a variety of other marine life. Shrimp, spots, mullets, etc. are studied to gather more information which might prove useful to fishermen as well as scientists.

One of the primary functions of this federal laboratory is to study and determine the abundance and geographic distribution of menhaden. The purpose of this is to understand and predict changes in the numbers and location of the species. This information is used to help set up facts and figures on the optimum commercial catch size to insure the best use of the fish resource, and to assure a continuation of the species. To accomplish this it is necessary for the scientists at NMF to work very closely with the commercial fisheries. Only through cooperative effort can the role of NMF in assisting the commercial fisherman be realized.

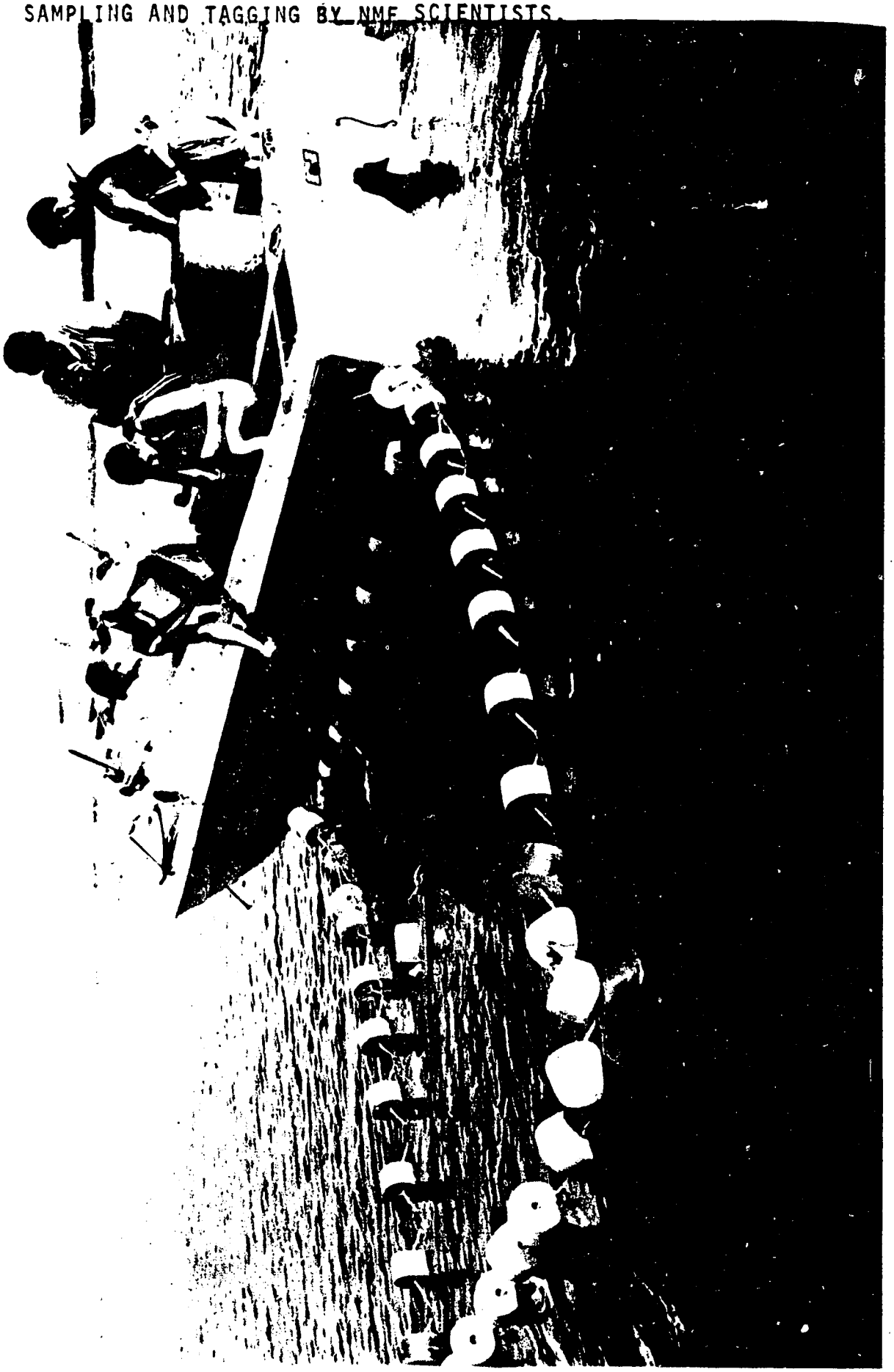
Research Studies on Menhaden

Sampling and tagging efforts. One of the prime facets of menhaden research programs at NMF is tagging of fish to study their migratory patterns. Fish to be tagged are retrieved from commercial fishing boats (Picture A) or from sampling in shallow water areas by laboratory personnel (Picture B).

Several tagging methods have been tried, but only one has been found suitable. This method is the use of metal tags injected into the stomach cavity of the fish. The tag is a ferromagnetic stainless steel tag, 14 x 3 x 0.5 mm, having a specific six character code printed on it. This is used for menhaden over 100 mm in length. For the juvenile menhaden, a smaller tag 7 x 2.5 x 0.4 mm, identified by a three character

PICTURE A. SAMPLING AND TAGGING MENHADEN ON COMMERCIAL VESSEL

PICTURE B. SAMPLING AND TAGGING BY NMF SCIENTISTS.



PICTURE C. TAGGING GUN USED TO INSERT TAGS IN MENHADEN.

code, is used. A record of the code on the tags is kept by the scientist so that it can be used to designate the place and time the tagged fish are released.

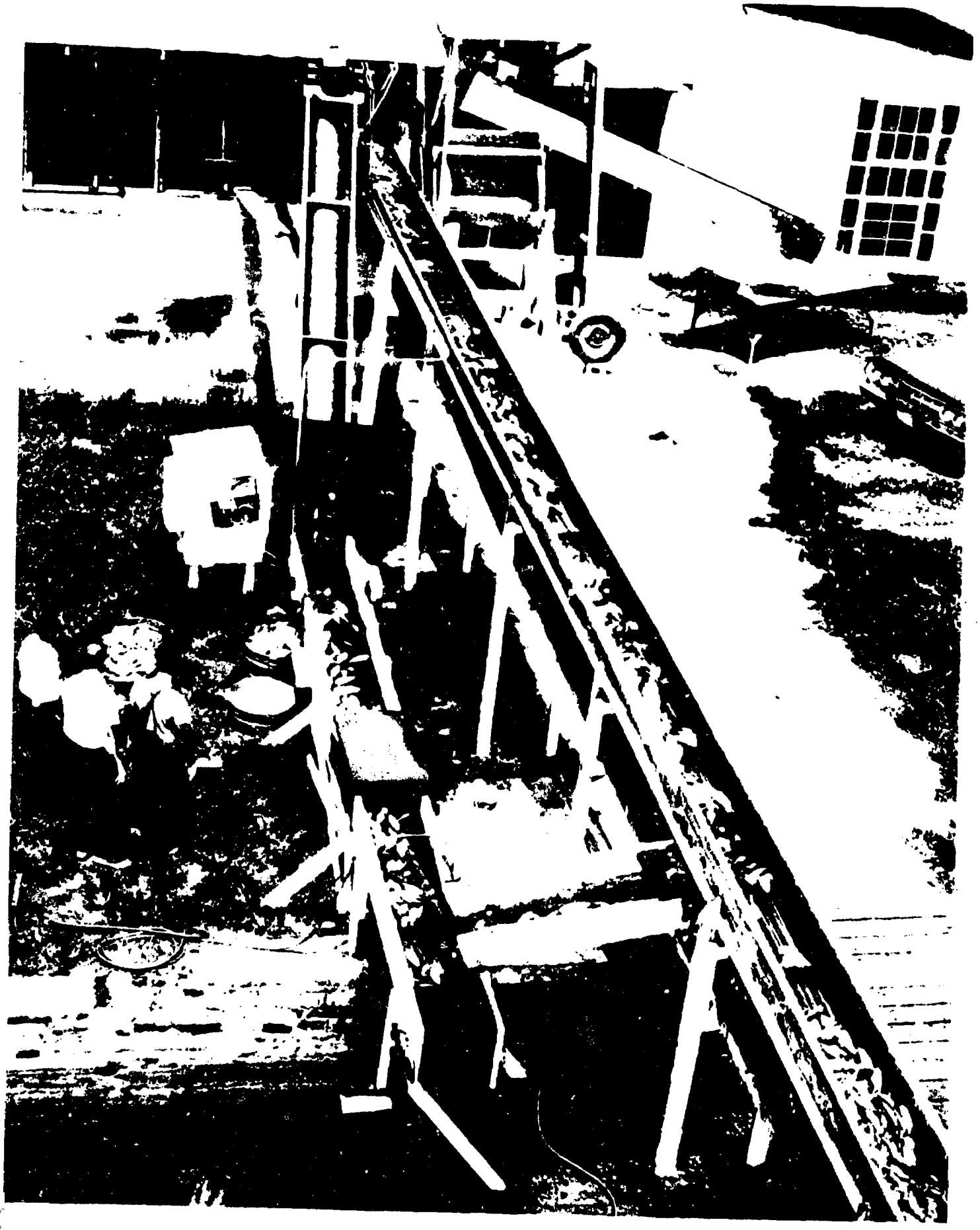
The most suitable method for inserting these tags is a tagging gun (Picture C). Tags are loaded into the gun's magazine and pushed through the barrel by a weighted slide. The gun is then "triggered" and the tag inserted into the fish. Up to 600 fish per hour can be tagged with this method. This tagging may be done directly on board a commercial fishing vessel (Picture A) or in the laboratory.

To retrieve the tagged fish, cooperation with processing plants is necessary. Fish captured by commercial boats are returned to the plants and placed on a conveyor belt (Picture D). Magnetic detectors locate tagged fish (Picture E) and a shunt on the conveyor belt separates them (Pictures F and G). The fish are relayed to the researcher and analyzed as to their movement from the point and time of initial release after tagging to the location and time of recapture. The character coding on the tags makes such information possible.

Trapping and capture methods. In the cases of both commercial and research capture of the fish, effective methods are necessary. For the capture of menhaden during the time and ages they inhabit ocean water, particularly during the late fall and winter, NMF depends upon commercial vessels. Scientists accompany these menhaden vessels and retrieve the fish to be used as research samples as they are taken during commercial efforts.

Experience has shown that for ocean-capture of large numbers of menhaden the purse-seine method aboard commercial vessels is most efficient. Purse-seing has advanced phenominally in the last 100 years. From the salining ships which could stay out only a matter of months, with lookouts posted on the masts to spot schools of fish, the industry has moved to 100-300 foot long diesel powered ships which can stay out indefinitely, and which are equipped with radar, sonar, and scouting planes (Picture H). These planes usually scout out a large population of menhaden and call back to the ship. Two purse-seine boats, each equipped with half of the purse seine net, are dispatched. They come up to the school, then split apart (Picture I), surround the school (Picture J) and then haul the catch back to the ship (Picture H, includes a catch of 64 metric tons). The menhaden then are pumped aboard by means of a strong vacuum pump, and placed in the hold of the ship until its return.

NMF itself has a fleet of small craft, which it uses during the seasons when menhaden are near shore or in estuarine and river areas. Here, additional, smaller type nets are required.



PICTURE F. RETRIEVAL OF TAGGED FISH BY NMF RESEARCHER.

PICTURE G. ADDITIONAL RETRIEVAL OF TAGGED MENHADEN.

PICTURE J. PULLING IN THE MENHADEN FILLED PURSE SEINE NET.

There are two types of channel nets useful in bays, estuaries, etc. The first is a suspended channel net, which is stationary, and allows the flow of water to carry the fish into the net. The second is a type which can be pulled by either man or boat, depending upon the size of the net and the load intended to be captured. Another type of net used particularly in the shallower areas is the portable drop net. This apparatus is a set of catamaran pontoons set up in parallel fashion, with the net stretched out to its width across them. On all sides of the net are weights. When it is suspended over a school of fish, or a school swims under it, the net is dropped on top of the school, thus taking a very large catch. This method, however, is mostly useful in flat bottom areas.

All these methods are utilized by NMF in the sampling of menhaden for research, and illustrate the necessary cooperation efforts between scientists and commercial fisherman.

Population information analysis. Upon completion of the tagging and recapture programs and of estuarine sampling programs, NMF scientists next compile the information gathered...such as life cycle, age, sex ratio of fish caught, size and weight of fish captured, the size and type of schooling menhaden, and movements of the fish population along the Atlantic seaboard.

(Life cycle). The life cycle of the menhaden is more complicated than that of most other fish (Figure 1). Adults spawn out in the open ocean, usually from October to March. The bouyant eggs are spawned near the surface of the water. This allows them to be carried freely by currents and wave action. They travel in small bunches or clusters, freely pushed by the surface action in the general direction of the shore. As soon as hatching occurs, the tiny larvae begin to head for shore. This "yolk sac" larvae then advances into a week old larvae, called an intermediate larvae. The intermediate larvae then grows into the advanced larvae which heads directly for the estuarine areas. In the estuary, the advanced larvae transforms into the prejuvenile. During this stage the prejuvenile exhibits nearly all the characteristics of the adult. At this time, the menhaden is about thirty millimeters long. Now developed into a juvenile, the menhaden begins a trek out into the deeper waters of the estuary and into the open waters of the ocean where mating will occur. It is in ocean waters that most fishing efforts occur, since advanced adult sizes are preferable in commercial catches. Menhaden may reach an age of 8-10 years, but recent commercial catches reveal very few older than 4-5 years.

(Age). Methods for determining the age of menhaden have been in effect at NMF since 1955. The normal precedure is to take 20 menhaden from at least two commercial landing vessels. After the length, weight, and sex of each fish is recorded, six scales are removed from each fish. After being placed under a 40 x microscope, the number of rings on the scales are counted. Each ring, like the method of determining tree age, represents one year's growth.

With this method of determining age of captured fish, scientists can maintain a record of the age patterns of fish taken in commercial catches. From this, an estimate of changes in age of captured fish can be kept from year to year. Table 1 illustrates such data, and shows that the amount of fish in metric tonnage reveals a definite decline from a period beginning in 1955 and ending in 1966. This trend has continued since 1966. The ages of fish caught show a marked fluctuation for each year, but none as extreme as that of the four year old and older size, which have been drastically reduced.

The vast majority of fish taken in commercial catches include fish between 2-3 years of age. Such research is indicative of overfishing, where the young are captured before they reach full maturity. This also would reduce the number of breeding age individuals necessary to increasing the population size. (Table 1).

(Sex). The number of male and female menhaden in the fish population can greatly influence the breeding activity of the species. NMF research has found that the sex ratio of the menhaden varies over the age range of the population throughout the age scale. At just under one year, the ratio is 1:1.03 (male to female). At age two a ratio of 1:1.0 is attained. Upon reaching age three, a ratio of 1:1.08 is reached. At age four, there is a slight increase to a ratio of 1:1.6. From age four to age seven the ratio changes little, and ends at ages eight to ten years with a decrease in ratio, down to a male to female ratio of 1:1.78.

These sex ratio changes that occur as the fish grow older appear to be numerically small. However, when the extremely large numbers of fish involved is considered, these seemingly small ratio changes can have considerable effect upon breeding and the number of new individuals added to the population each year. The numbers of females per male increases as the fish grow older, being much greater after the fish reaches 4 years of age and older. Thus, the fact that few fish older than 4-5 years are evident, and that most commercial catches include 2-3 year olds, would indicate that the ages during which the population could potentially produce the greatest number of

Table 1.--Age composition of Atlantic menhaden in samples of landings by purse seiners, 1955-66

Year	Weight of landings	Age in years 1/									
		0	1	2	3	4	5	6	7	8-10	Total
	Metric tons	Millions of fish									
1955	641,900	761.0	636.5	1,045.6	265.5	300.4	35.3	9.5	1.8	0.6	3,056.2
1956	712,100	36.4	2,078.5	902.6	318.0	45.2	152.4	28.9	6.7	2.0	3,570.7
1957	606,100	300.8	1,596.5	1,348.3	96.5	70.9	40.4	37.0	4.3	1.2	3,495.9
1958	510,300	106.1	859.5	1,625.1	71.9	17.3	15.9	9.1	4.9	0.4	2,710.2
1959	659,000	11.4	4,032.6	821.9	382.7	33.6	11.7	12.3	4.4	1.7	5,312.3
1960	529,300	72.2	281.0	2,207.9	75.0	101.2	24.6	7.4	2.3	0.6	2,772.2
1961	575,700	0.3	832.4	502.3	1,207.1	19.2	29.8	3.1	0.8	0.2	2,595.2
1962	538,000	51.6	519.8	831.8	221.0	421.9	30.6	24.5	2.8	0.6	2,104.6
1963	346,100	84.6	717.8	640.7	199.7	47.0	53.3	10.3	3.5	0.6	1,757.5
1964	271,700	315.7	704.6	578.4	120.7	18.9	8.3	7.7	1.3	0.3	1,755.9
1965	273,000	127.2	820.5	389.2	102.2	12.6	1.9	1.3	0.6	0.1	1,455.6
1966	219,600	303.8	421.8	412.8	106.1	12.0	0.9	0.1	0.1	--	1,257.6

young (the greatest per cent increase) are being drastically reduced in quantity ... most likely by overfishing.

(Size and type of schooling). Menhaden, under normal circumstances, school by age, i.e., one year olds school together, and two year olds, etc. The number of fish in each school varies greatly. One factor which separates the menhaden from fishes similar to it, is the fact that when they are frightened they do not scatter, but school together closer. This, in itself, leads to the larger number of fish caught per year in the United States. This also allows spotter planes to locate schools easily, and even to judge the approximate school size.

Tolerances to temperature and salinity. Research conducted at NMF has shown that the menhaden is capable of tolerating a wide range of temperatures, as well as a widely varied salinity range. This accounts for the wide distribution of the fish, i.e., its movements from virtually freshwater rivers to high ocean salinities, and from warm estuarine waters of summer to the cold water of winter and the ocean. The species' life cycle and migratory habits reflect these wide salinity and temperature tolerances. The menhaden larvae migrate from the ocean, where salinities range from 33 to 36 $^{o}/_{oo}$, into estuaries and rivers where salinities fall below 1 $^{o}/_{oo}$. An example of this tolerance was demonstrated vividly when a school of juvenile menhaden became landlocked in a freshwater reservoir located in South Carolina. They survived for many years, and grew to full size and maturity. The only detriment was the fact that as adults they gave no evidence of reproduction. One theory, that low salinites were essential for the young to mature, was disproved in 1962-64 at NMF. Many larval menhaden were placed in holding tanks with salinities of 25 to 40 $^{o}/_{oo}$, much higher than the salinity they are found in while young in the natural environment. There the fish grew successfully, thus disproving the theory. Nevertheless, the young are found in low salinity water in the natural environment, thus indicating these salinities are optimum at the young stages. The adults spawn in higher ocean water salinities. Based on research studies and observations, the adults in the natural environment require higher salinity water to reproduce.

Water temperature is another factor considered to have a large effect upon the menhaden. Following careful field observations, scientists at the lab tested the amount of temperature "shock" the menhaden could stand, by simulating environmental temperature conditions in the laboratory. The controlled laboratory temperatures ranged from 7.0 to 20.0 C^{o}, a range of winter to early summer and spring time temperatures in the environment. The menhaden were placed in these tanks, and the results of the tests were recorded as follows:

When the water temperature was lowered to 3 C° or less, 50 percent of the larvae died within 1 1/2 days. If the fish had been acclimated, i.e., held in temperatures so as to adjust to them, to temperatures of 10 C° or warmer, a greater number died at temperatures of 3 C°, and 50 percent were killed at 4.5 C°. If the fish were acclimated to 15 C° or less, they could survive in temperatures down to 1.5 C° for up to 12 hours. A summary of these results indicates that larval menhaden can suffer mass mortalities when water temperatures fall below 3 C° for several days or when the water temperature is chilled rapidly to 4.5 C°. Thus, sudden and extreme temperature changes in the natural environment can have devastating effects on the young menhaden larvae in the estuarine system.

Such studies as these at NMF help the scientist and the fisherman understand more about where and why the menhaden can be found at different locations during the life cycle.

(Mapping migrations and distribution). After research data is gathered at NMF, the scientists compile the results and draw maps which show direction of migration and numbers and size of fish located at various areas along the coastal Atlantic (Table 2). For example, a tagging study conducted by NMF during the summers of 1967 and 1968, included procedures where menhaden were tagged and released at key locations along the eastern seaboard. These key points were along the North and Middle Atlantic, Chesapeake Bay, North Carolina and Florida-Georgia area. The movements of the menhaden to and from these areas were studied during the following year. The study revealed important information concerning the migratory habits of menhaden (Figure 2).

Of the total number released in Florida, 26 percent were recaptured in the same waters the following year. Thirty-three percent moved into the waters of North Carolina, thirty-four percent moved into the water off the Chesapeake Bay area, and the remaining 7 percent moved off into the waters of the North Atlantic (one-fourth of the population stayed in the same area and 3/4 moved north). Of the menhaden released in the North Carolina area, 66 percent of the tagged fish moved into the waters off the Chesapeake Bay area, 20 percent returned to the same general area, and 13 percent moved into the North Atlantic region. The remaining 1 percent moved south into the Florida-Georgia waters (one-fourth returned to the same area and 3/4 moved to Chesapeake). Of the fish released in the Chesapeake Bay area, 73 percent returned to the very same waters the next year, and the remaining 27 percent moved north into the waters of the North Atlantic (three-fourth returned to the same area, and 1/4 moved south). In the North Atlantic area, 75 percent of the menhaden returned to the areas from which they came, while only 25 percent moved southward.

Table II

Year	Area					Total
	North Atlantic	Middle Atlantic	Chesapeake Bay	South Atlantic	North Carolina fall fishery	
	thousands of metric tons					
1940	16.8	91.1	35.3	37.9	36.6	217.7
1941	33.6	104.1	60.2	45.2	34.9	277.9
1942	14.6	77.7	21.9	32.9	20.1	167.2
1943	9.8	96.8	42.1	59.7	28.8	237.2
1944	27.5	122.6	32.2	46.9	28.7	257.9
1945	34.0	136.4	35.1	58.5	31.9	295.9
1946	42.9	183.8	57.6	40.8	37.3	362.4
1947	44.2	185.8	81.2	34.2	32.9	378.3
1948	44.4	137.4	68.3	55.8	40.6	346.5
1949	52.2	149.8	62.8	59.3	39.7	363.8
1950	49.3	143.0	63.1	20.0	21.8	297.2
1951	51.0	168.6	56.1	54.6	31.1	361.4
1952	58.1	193.7	45.7	86.0	26.4	409.9
1953	59.7	363.2	77.8	52.8	39.7	593.2
1954	64.9	335.7	126.0	39.6	41.9	608.1
1955	83.3	317.6	132.7	43.4	64.4	641.4
1956	98.5	378.3	94.0	68.6	72.7	712.1
1957	83.5	304.5	126.4	36.4	52.0	602.8
1958	36.0	211.1	151.3	41.3	70.3	510.0
1959	66.0	250.9	196.8	63.1	82.3	659.1
1960	66.4	256.0	108.5	36.7	62.2	529.8
1961	58.6	274.6	128.7	44.1	69.9	575.9
1962	64.7	249.9	155.1	42.2	25.8	537.7
1963	35.2	111.7	104.0	34.2	62.8	347.9
1964	13.0	35.2	134.1	46.5	38.4	269.2
1965	11.9	45.8	126.1	36.7	52.9	273.4
1966	1.8	6.0	115.6	24.5	71.7	219.6
1967	0	17.1	91.1	34.1	51.2	193.5
1968	6.7	26.2	115.5	33.6	52.8	234.8

Table 2.

The chart above shows the Atlantic menhaden purse-seine catches by year, and by area. (Note North Carolina fall fishery results).

Figure 2. WHERE TAGGED FISH GO

1967- 1968

ARROWS WITH LESS THAN 1% NOT SHOWN

Chart 17

During the wintertime, nearly the same results, only in reverse were recorded (Figure 3). This indicated about 3/4 of the population moved south during the winter. An explanation of this is that during the summer months the general direction of migration is to the north, while in the wintertime, the fish are moving south.

Also evident from this research was the fact that the older fish (8-10 years) tend to move farthest north, with 4-5 year olds moving to the Chesapeake Bay area and slightly north, and the younger individuals moving only slightly northward. This fact has considerable consequence to the fishing industry, in that the location of capture can influence the total tonnage of the catch.

The consequences of menhaden migratory patterns to the size and availability of the fisheries catch off the coast of North Carolina is evident. Carteret County estuaries, along with the other estuarine systems of North Carolina, are very important as nursery areas for the developing menhaden. These fish leave our estuaries and move up and down the coast, where they are available to commercial fisheries in other Atlantic states. Our coastal area is the central point in the migratory route of menhaden, thus accounting for the large number of fish available to the fisheries of our county.

Predictions. In the area of predictions concerning the menhaden, the scientists at NMF can give only a rough idea as to specifically where the swimming population can be found. However, the seasonal location of catches can be predicted with accuracy. Also the general ages and weights of menhaden in specific areas can be predicted as a result of the complicated research done on the fish. The general area in which certain schools of fish may be located can be estimated by knowledge gained on the life cycle and environmental tolerances of these fish. But, as the size of schools is concerned, there is no governing factor which regulates this, so predictions are not possible. Therefore, laison trips by airplane and direct spotting by ships are the only means of determining the size of the schools.

COMMERCIAL INFORMATION

The fact that menhaden spawn, develop, and migrate in and out of the Carteret County estuaries and near-shore ocean waters has a considerable impact on the commercial fisheries of the menhaden in our area. Naturally, the greatest influence is on the economic and sociological aspect of the fisheries.

Uses of menhaden. The uses of menhaden commercially are many. The fish can be pressed out and the remains processed into meal, oil and condensed soluables. The use of this fish is, however, not normally a direct one; that is to say that the fish usually are not consumed as a human-type food. Menhaden roe (eggs) are considered quite tasty by local populations in Carteret County, but the meat of the fish's body is too oily to be edible. The fish meal is very rich in protein, and makes an excellent food supplement for poultry, hogs, mink and other domestic animals. The oils are used in various commercial products including paints, soaps, lipsticks and lubricants.

Economic influence of the industry. The amount of money brought in by the industry in Carteret County alone is tremendous. Menhaden, for example, top all other fish in pounds caught annually. The record high was reached in 1956, when about 1.6 billion pounds, valued at around 20 million dollars was landed. Since 1963, however, the trend has been that the industry in Carteret County has been on the decline. Prior to 1963, more pounds of menhaden were landed on the Atlantic coast, including Carteret County, than in any other area. However, now the major portion of menhaden landed are of the species Brevoortia patronus, in the Gulf of Mexico. More recently there has been a slight increase in gross tonnage of Brevoortia tyrannus in the North Carolina fall fishery area.

Sociological value. Approximately eight large menhaden boats per factory in Carteret County are used during the fishing season. On the average about 22 people per menhaden boat are employed, resulting in approximately 528 people employed to crew the boats. Anywhere from ten to thirty men and boys, both part time and full time, are employed in the processing plants. Haynie Products, Inc., for instance, employs from twenty to forty-five people. This increases the number of persons employed directly by the plants to over 600, at least during the fishery season.

Seasonal fisheries and effect on employment. The employment of these people to man boats and to work the processing plants is at best seasonal. The fishing season along the Atlantic coast is from May to October, but the North Carolina fall fishery lasts from November to January. In many cases the boat crewmen themselves migrate with the fish, following the fishery along the coast so that year-round employment is generally possible for these men.

RESEARCH AND THE COMMERCIAL FISHERY

The end aim of this paper was to bridge the gap between the scientist, the fisherman and the layman and to present the work of the researcher at NMF in such a way as it could be better understood and appreciated by the general public. The scientist is faced with this same problem and has made efforts to overcome it.

Communication between scientist and fisherman. Scientists at NMF have no authority to enforce any fishery management program, i.e., they can not direct a program to close certain areas to menhaden fishing, nor to limit the size of a catch, nor to require that only certain size fish be taken ... even when such measures would be best for the continuation of the fishery. Rather, the role of the NMF agency is to research all aspects of the menhaden to gain an understanding of the dynamics influencing the abundance and future of the species. From this research the scientist tries to make predictions as to whether the fishery will be successful in future years. Unless NMF can communicate this information to the commercial fisherman, such research efforts have limited application.

For this purpose, NMF has staff members who are responsible for helping to inform the public of current menhaden research. The lab has open house each year for showing exhibits and information concerning menhaden. In addition, personnel are available for responding to all requests sent to the lab for information on menhaden.

Continuous contact is maintained between the lab researchers and the commercial fisheries. Staff members have the responsibility for regularly visiting the menhaden processing plants to aid the fisheries in any way possible. In these ways, the NMF researcher can share his data and accomplish the end goal of his work ... that of helping the menhaden fisherman at present and in the future.

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SALT MARSH CONSERVATION IN CARTERET COUNTY

Perry Smith
Maurice Mann

SALT MARSH CONSERVATION IN CARTERET COUNTY

by

Perry Smith and Maurice Mann

ABSTRACT. This project was an effort to save our marshlands in Carteret County. We contacted Mr. Doug Ringer, permit inspector for dredge and fill applications with the North Carolina Department of Commercial and Sports Fisheries in Morehead City. He gave us a lot of information on the subject, and came to our Environmental Studies class as a guest speaker. We also gathered information from the school and county libraries.

This project was started on September 25, 1972, and ended on February 26, 1973. The ESP staff, especially Mrs. Spitsbergen, has been very helpful to us. They provided us with information as to where to go, whom to see, and how to go about doing the project.

We found out that marshlands across the North Carolina coast are being destroyed everyday by man's activities. We also found out that dredge and fill regulations have been increasingly successful in protecting the marsh. At the end of this project we wrote a newspaper article titled, "Marshlands ... Here Today, Gone Tomorrow?", which appeared as guest editorial in the Carteret County News-Times on March 16, 1973. We think this project and newspaper article will give the people of our county a better understanding of the marshes and what is happening to them.

CARTERET COUNTY NEWS-TIMES
Thursday, March 15, 1973
EDITORIALS OTHER VIEWS

Marshlands—Here Today, Gone Tomorrow?

The following article was written by West Carteret High School environmental studies project students as a plea to preserve the marsh areas north of the Beaufort-Morehead causeway and to prevent further disruption of the marsh.

RECENT ARTICLES in the NEWS-TIMES have reported applications to the county commissioners for rezoning areas of the Beaufort-Morehead causeway, notably the north side of Highway 70. The commissioners are to be highly commended for taking a stand and refusing the rezoning requests, which would have allowed marina development.

This area, nevertheless, is presently zoned port industrial, originally for the purpose of dumping spoils from state port dredging. Thus, the marsh is not yet safe.

Except for a narrow border on the road, most of this area is intertidal shoreline thick with growth of salt marsh cordgrass. Persons appreciating the vast importance of marshes such as these react with distress to the possibility that this area is in jeopardy of any kind. This marsh is one of the few remaining areas providing easy access from the road, where students can go to study and learn about the marsh. It also is the sole area remaining in the western part of the county where a panoramic view of the marsh is possible from the highway for residents and tourists alike to savor a natural undisturbed marsh.

OUR PLEA is to the County Commissioners to consider this area, one of the most beautiful natural resources in our county, as a county park. . .to be preserved entirely in its natural state.

Habitually, uninformed people have thought of an estuarine salt marsh as an area to dump rubbish, as a site for an industrial or storage plant, as an area for cottage development, as a channel for a marina, or as a mosquito breeding ground to be drained or chemically treated. In each instance, the marsh would be ecologically marred or destroyed.

In the past few years scientists have furnished data that pinpoints the essential role of marshes in the total ecology of an estuary. We cannot ignore these facts, for the truth and beauty of nature's design for the marsh are evident. Nature planned the marsh as a food factory for millions of animals on the marsh and in nearby waters, a spawning and-or nursery ground for hundreds of salt water species, a breeding and resting spot for a great variety of birds and other animals, and as a beautiful part of the shore scene.

NATURE HAS been most generous in the marsh, providing ample sunlight and nutrient mineral for photosynthesis. The energy produced by salt marsh cordgrass is comparable to that of sugar cane fields. . .and no one has to cultivate the marsh! As much as 80 per cent of the food energy that supports the whole estuary comes from this cordgrass. The majority of our important commercial and sports fish and shellfish are directly dependent upon this food material at some time during their life.

Many animals harvested in the ocean off our coast including sea trout, menhaden, striped bass, shrimp — are born or grow up in and around the marshes of Carteret County. Shrimp, blue crabs and menhaden, for instance, are spawned in the ocean. Yet, they could not develop into adults unless they were swept back into the estuary where the marshes furnish a haven with abundant feeding and foraging grounds. The marshes at high tide provide protective cover for these tiny developing animals, and at all times a constant food source for rapid growth. These are the breeding grounds of mussels, clams, crabs, snails and other lower forms of marine life. Scallops and oysters need the marsh, for the nutrient minerals washed from the marsh support the tiny floating plants on which these shellfish feed. If sports and commercial fishermen are willing to sacrifice these animals, then they can accept the destruction of the marshes.

The marsh, then, is not just grass growing on the shore. It is part of a large system in the estuary where one part is essential to the success of all the other parts. Menhaden, blue crabs, spot, croaker, shrimp, clams and oysters, do not just live on and around the marsh by chance. Each has a special niche on the marsh; each depends upon it.

SOME PEOPLE still view the salt marsh as an ill-smelling bog having little value to our county. Yet great beauty can be seen there. The brown color of the winter marsh is beautiful for it signifies that marsh grass is dying back and being converted into tiny tidbits of food energy for animals in the estuary. Some of this material will become nutrient elements that will support the springtime growth of luxuriant green marsh grass and microscopic floating plants. Nothing is more pleasing than the smell of clean salt air blowing off undisturbed marshes.

This is not a romanticist's view. It is beauty based on understanding of facts. The romanticist is the person who thinks he can destroy the marsh without paying a tremendous price — culturally, scientifically and economically.

Evidence indicates that the price already will have to be paid. A survey of the wetlands in 13 coastal North Carolina counties was conducted in 1952, and a similar survey was made in the same counties in 1967. Results of the two studies showed that in a fifteen year period 45,292 acres or 18.5 per cent of the salt marshes in these counties had been destroyed by mosquito control, dredging for boat marinas, diking by the Army Engineers, highway construction, canals and industrial developments or expansion.

WE CANNOT afford to lose any more of our marshes. The fairy tale that development is inevitable and irreversible, no matter what the cost to the environment, is not based on fact. The great value of the marsh is supported by fact.

Unfortunately, those interested in trying to pass or enforce laws which protect the environment have been legally helpless or politically ignored. Dredge and fill regulations have been increasingly successful in protecting the marsh, but other support must also come. Zoning of marsh areas is in the hands of county government, which responds to the public will. Responsible citizens must voice their concern for the marshes. Unless something is done, and a stand is taken, our remaining marshes in Carteret County will vanish rapidly.

Maurice Mann and Perry Smith
Environmental Studies Project
West Carteret High School

SALT MARSH DEVELOPMENT PROJECT ON SHACKLEFORD BANKS

Len Gibbs
Terry Walker
Dick Spears
John Renfrow

SALT MARSH DEVELOPMENT PROJECT ON SHACKLEFORD BANKS

BY

Len Gibbs, Terry Walker, Dick Spears and John Renfrow

ABSTRACT. The purpose of this project was to see how the grazing of livestock on Shackleford Banks effects the growth of marsh grass and thus the development of the salt marsh.

This project was begun with the help of Mrs. Judith Spitzbergen (Environmental Studies Project teacher) and Mr. Bob Barbee. Mrs. Spitzbergen provided background information on the Island. Mr. Barbee (Director of the Cape Lookout National Seashore) told us of the project, financed the materials we would need to carry it out and helped us conduct the project. Mr. Paul Godfrey had done this same project on a smaller basis some years before. Though we never talked to him in person, we listened to a tape-recorded lesson he had made on how to compile data for the project.

The project was accomplished by building a 5'x20'x20' (400 sq. ft.) fence around an area of marsh on the western end of the island. After the fence was built, the area enclosed by it was protected from the grazing livestock and thus allowed to grow to its full height. As the grass grew, sand was trapped by it and the overall elevation of the land enclosed was raised. The land development was measured by comparing the growth of the grass and the height of the land inside the fence to the grass and land immediately outside the fence.

The project is not concluded. It is a project that should last over a period of years in order to see how much the land will develop. Hopefully, other ESP students will continue the project next year.

SEAFOOD PROCESSING IN CARTERET COUNTY

Mike Spann
Greg Baltezore

SEAFOOD PROCESSING IN CARTERET COUNTY

by

Mike Spann
Greg Baltezore

Our project involved a study of seafood processing in Carteret County. We were concerned about the large amount of money leaving the county because of lack of adequate seafood processing facilities.

Carteret County has 615 miles of coast line, with more than 100,000 square acres of estuarine waters and three major fresh water river systems. Our continental shelf extends from 16 miles off-shore at Cape Hatteras to 65 miles off-shore at Cape Fear. This system of large estuaries, rivers, and extensive continental shelf waters provides an ideal combination of environmental conditions for a wide variety of marine fisheries.

In the past the fisheries and the money brought in by them, have been adequate to support a large number of people in our county. These, traditionally, have been individuals or family groups working independently to harvest and sell their catch. The harvesting of seafood often is disappointing and unsuccessful, since the fisherman can not control weather conditions and availability of fish, and since the cost of boat and equipment purchase and upkeep is so high. Also the fisherman has little say-so as to the economic value of even a good catch. Generally, when fish are plentiful, and the independent fisherman realizes a temporary "good fishing spell" then the price per pound goes down. Results are that the independent fisherman seems to have a very difficult time providing for his family.

There has been a continual increase in the pounds of fish brought to dockside (caught and brought in for sale). For instance, total poundage, excluding menhaden, was 69 million in 1967 and 84 million in 1972. Also the dockside value has

increased for this catch from $9 million in 1967 to $12 million in 1972, a gain of only $3 million over a five year period. This gain represents the increase in revenue for the independent fisherman. But that same $9 million dockside value became a $600 million produce after the fish were processed for market sale. Although analysis of 1972 market prices has not yet been completed, it can be projected that the 1972 total market price following processing would be from $800 million to $1 billion. With recent inflationary rises in retail prices this figure could be much greater. This retail value, of course, has not affected the income of the individual fisherman bringing his catch to dockside.

This small increase in dockside value has resulted in a large reduction in numbers among individual fishermen. In the state of North Carolina there were 5000 commercial fishermen in 1967. In 1950, Carteret County alone had 1102 commercial fishermen, but by 1960 the number had dropped to 542... only half as many in a ten year period. This decrease could be due to many things, but most likely is caused by the increase in large-scale commercial fishery operations by both small and large fisheries, corporations, etc. Such organized groups, backed by reliable capital, have left the independent fisherman with little say-so as to the setting of prices for dockside values. Also he is uncertain as to whether his catch can be sold at any price. Thus, the small family group and the independent fisherman have been deprived of assurity of income, even when the risky business of harvesting fish has been successful enough to give him an adequate catch. It is likely that many commercial fishermen no longer fish full-time, but have gone to work in larger industries such as Conners Mobile Homes, Block's Manufacturing Company, Naval Air Rework Facility at Cherry Point, and Bluebell Industries. These men fish only during after-work hours, and are not numbered among the commercial fishermen. Their incomes had to be supplemented in industries unrelated to their sea-going knowledge.

The majority of independent fishermen in Carteret ship their catch to a dealer out of the county, and very often out of the state. Thus, almost all of the seafood caught in Carteret County and other coastal areas of North Carolina is shipped by refrigerated truck to New York, Norfolk, or Baltimore. In some cases, catch-laden boats return to shore for ice-packing, and return directly to sea. These boats most often travel to Norfolk. In so doing, the independent fisherman can directly cut costs, instead of increasing costs by bringing the catch into port to have it shipped by truck.

There are various fishhouses in Carteret County to whom the independent fisherman can sell his catch directly. These fishhouses range in size from about a six-man operation to large fishhouses which do their own processing. The small fishhouses dress their own fish and sell to the public at request and to local restaurants. Larger fishhouses with their own processing facilities sell to the public and to local restaurants, but also ship their products to large processing and packaging plants up-state, or to seafood wholesalers in North Carolina and other states. The wholesaler then sells to retailers throughout the United States. Thus, the original catch value is increased many times, and the greatest profits realized within businesses and at locations outside of Carteret County. The few processing plants in our county help to keep some of these large profits within Carteret, but the need for larger and better processing plants still is an evident problem.

The major fishhouse-processors in Carteret are located throughout the county, and have access to the sounds and open sea. These include Davis Fish Market (Beaufort), Otis Fish House and Lea's Fish House (Morehead), Frost Seafood (Salterpath), Elmer Willis's and Clayton Fulcher's (Atlantic) and Luther Lewis & Sons (Davis). As an example, a visit to Luther Lewis & Sons processong plant, which is privately owned and operated, revealed that their staff cooks, cleans and dresses crab meat and packs it for shipping. Lewis sells four types of crab meat ... cocktail, claw, backmeat and scrap ... always to one company in Maryland. His facility is large enough to accommodate whatever amount of crab meat currently being brought in by his own boats and those of other commercial fishermen.

In addition to these plants, three menhaden processing plants are located in Beaufort and Morehead, but these operate their own boats and crew, and do not deal with other commercial fishermen.

These fishhouse-processing plants process a variety of seafood, both fish and shellfish. Most of these businesses own and operate their own boats, but still accept fresh caught seafood from independent fishermen. However, the plight of the independent fisherman is compounded here, since the boats operated by the processing houses often provide the fish needed to fill the quota of the plant, and the independent fisherman is unable to sell at "best prices". Often he must sell to friends, or resort to taking his catch to Norfolk.

The obvious solution to the problems stated here would be the establishment of more and better processing plants. To find out more about the possibility of this solution, Dr. T. Miller was contacted at the Marine Chemurgics Laboratory, an extension of the University of North Carolina at Raleigh. The lab is located on Highway 24, 1.7 miles south of Broad Creek bridge. Dr. Miller's work is involved in better and more efficient methods of seafood processing. He works closely with the N.C. Department of Commercial and Sports Fisheries in Morehead City. For instance, Dr. Miller has just completed a 5-year research study in seafood processing. Dr. Miller showed us how he had converted a horse stable into a self-contained and operational seafood plant. The plant had research rooms, conference rooms, freezers, and food preparation rooms. The goal of his lab is to help both fisherman and processor. Dr. Miller and his staff help the fisherman by studying and devising improved techniques of harvesting seafood and by studying which times of the year are best for harvesting certain types of fish and shellfish. In the same sense, he helps the processor with new techniques for processing and storing seafood. Dr. Miller deals both directly and indirectly with the fisherman and processor through personal visits, special meetings and demonstrations, and bulletins.

As a result of all their work and study in the areas of fisheries, processing and marketing of seafood products, Dr. Miller and his staff-associate, Mr. David Hill, spend much of their work time and many after-work hours trying to develop other seafood processing plants in Carteret County. One specific plant they have in mind, for instance, would buy, prepare and sell every type of marine life currently on the market. The ideal location, according to Dr. Miller would be central in the county ... possibly Morehead City. This plant operation and design would be based on a design of a similar plant in Louisiana.

Dr. Miller discussed the advantages and disadvantages of such a plant in our county. Advantages include (1) the employment of more people in the county (2) bettering and maintaining good relations between processor and fisherman (3) keeping more money in the county, and (4) improved facilities and (5) allowing greater local determination of price value for seafood products.

(1) The plant would need a full-time staff. These people could be drawn from the fishing community, and could thus draw upon and utilize their own expertise in fisheries.

(2) Better and closer relationships could be established between local processor and local fisherman, where the fisherman could have more say-so in price setting and the supply-demand ratio for his product.
(3) By cutting out the out-of-county middleman-processor, the profits realized after processing would be available to in-county people.
(4) Adequate freezing rooms could handle whatever seafood came in on a given date from a variety of fishermen. The product then could be held until prices were more advantageous to the fisherman and processing plant.
(5) This arrangement would assure the fisherman of a more guaranteed income, encourage him to fish full-time, and increase his basic income to a higher level.
(6) The improved facilities would offer better, more efficient processing techniques, with better quality products, including more attractive packaging for increased competitive sales.
(7) Out-of-county fishermen would be encouraged to bring their catch to Carteret for sale and processing, which would bring in more money to the county, instead of the current movement of money outward.
(8) These facilities would encourage older, established fishermen to use the plant, and thus to seek a wider market for their products.

However, there are disadvantages involved in such a project. These include (1) properly trained personnel for the processing plant, primarily a director (2) lack of capital to establish the operation and purchase the new processing equipment (3) acquisition of land on which the plant would be built, and (4) encouragement among the fishermen to utilize the plant's improved facilities.

(1) The head of plant operations must be a specially trained person capable of assuming the responsibility, and knowledgable in the most recent of processing techniques and marketing skills. He must know the role and problems of the fisherman and be willing to work to help him. He must know the fishing business and be trained in the seasonal availability of different seafood species.
(2) Costs of establishing the plant might run as high as a million or more dollars. Thus, capital investment is a problem, since banks are hesitant to grant such large funds, particularly to the unpredictable fishing business. Possibly a grant from the government could be obtained.

(3) Property on which the plant would be built must be located in a deep-water area since both shallow and deep-water fishing boats must be able to reach the facility. Such water-front property currently is sold only at premium costs.
(4) Old, established fishermen are hesitant to utilize new facilities, and must be contacted and encouraged so that a feeling of trust is established between processor and fisherman.

Dr. Miller currently is working diligently to achieve this goal of a new processing facility in Carteret County. Much work remains, however, and many supportive people are necessary. Indications have been that many people are in favor of such a local processing plant, and would contribute a great amount of time and effort towards this cause.

SICKLE CELL CLINIC FOR CARTERET COUNTY

Mike Johnson
Lynda Bell
Carl Stiles

SICKLE CELL CLINIC FOR CARTERET COUNTY

by

Mike Johnson, Lynda Bell, Carl Stiles

The purpose of our project was to set up a clinic to test the Black citizens of Carteret County for sickle cell disease. After weeks of work the clinic was opened but, we found that we couldn't stop there. We discovered a need for offering genetic counseling to carriers of the sickle cell trait and proper treatment for those afflicted with the disease.

Our first step in starting this project was to contact people and institutions that could provide us with information about sickle cell disease. We contacted:

Deaconess Hospital
602 N. 19th Street
Milwaukee, Wisconsin

Duke Medical Center
Duke University
Durham, N.C.

Carteret General Hospital
Morehead City, N.C.

Carteret Community Action and Carteret Headstart Program
Carteret County Board of Education
Beaufort, N.C.

Local Doctors.

Using the information we collected, we set up an informational and educational program for the schools in Carteret County. The schedule of our programs was approved by the Superintendent of Schools, Mr. T.L. LEE, and by the principals in the schools we were to visit. Our program consisted of a record-filmstrip which discussed the history, the symptoms, the causes, the inheritance patterns of the disease and how Blacks can fight the disease in their communities. With the help of the Head-start nurse, the sickle cell testing procedure was demonstrated for the students in each school.

We had extensive newspaper coverage to help us inform the people where the clinic would be held and on what dates it would be open.

CLINIC DATA

CLINIC DATES	NUMBER TESTED	NUMBER WITH TRAIT
February 17	88	6
February 24	193	17
March 3	340	25

On a national basis, about 8 to 10% of Blacks are carriers of the trait. We found our county to be consistent with national statistics. It is now imperative that our county provide adequate counseling services for those our clinics have identified as carriers of sickle cell disease. We must not forget the medical needs of those who are afflicted with the disease and every effort must be made to see that these needs are adequately met.

The staff of the Environmental Studies Project helped us in many ways. First, they helped us to begin this project. They showed us what initial steps needed to be taken, and this was a big help. They helped us identify officials in Carteret County and in surrounding counties who could help us. We would like to thank Mrs. Beth Taylor for her outstanding work in helping us. We would like to extend special thanks to the Headstart program for letting their nurse, Mrs. Ada Taylor help us with our school visitation programs, for purchasing 500 sickle cell coloring books for the younger school children to have and for purchasing the sickle cell testing solution so that the clinic was possible. Without Mrs. Ada Taylor, Mr. Leon Mann and Mr. Henry Sermons, the clinic would never have been a reality, much less a success.

16 MM FILM ON SCHOOL ORIENTATION

Wayne Beasley
Mary Ann Baysden
Reid Brady
Len Gibbs
Clyde Harvell
Randall Parker
John Renfrow
Dickie Spears
Terry Walker

16 MM FILM ON SCHOOL ORIENTATION

by

ENVIRONMENTAL STUDIES PROJECT II

INTRODUCTION: There was an apparent need for some improvement in the present program used for West Carteret High School's Spring Orientation Program for incoming freshmen. Several things were considered, but it was decided that the best tool would be a 16mm color film with sound depicting West Carteret High School. We estimated the proposed film should run about 20-25 minutes.

PROCEDURES: After some advice from Pete Templeton, media specialist for ESP, we decided our first task was to decide exactly what were the most important aspects of high school life. Secondly, we decided which of these aspects would realistically represent West Carteret. After some debate, we each decided to concentrate on certain areas including faculty, administration, curriculum, scheduling, student life, extra-curricular activities, and athletics.

The next step was script writing. With the assistance of school administrators, faculty members, and Mrs. Robert Windsor, staff advisor, our scripts were completed and accurately timed so as to determine the film footage needed. Script writing takes time when one considers composition, smooth transitions from subject to subject, and the time of the year in relation to activities that were available to film. Naturally, the scripts could not incorporate aspects of school life which were not available for filming.

With the additional assistance of Mr. Raymond Horne, WCTI-TV, we accomplished the third major step of our project. We shot the majority of film needed to cover the subjects in the scripts, approximately 5,000 feet. All of our film was processed at WCTI-TV in New Bern. As expected, we found some gaps in our filming and had to alter scripts in order to make use of excess footage. For the most part, however, we found that we had been fairly selective in choosing what to shoot and, therefore, had very little wasted film.

The biggest job was accomplished about two weeks before the "due date" for the film. Not only time consuming, the editing and splicing of film was the most important aspect of the project. Special emphasis had to be placed on getting the film in proper sequence to correspond with the scripts and special care had to be taken to properly splice film together so as to prevent breakage when shown. After about a week and a half of alterations, the 23 minute film was complete.

The final job was to record all the scripts in coordination with the movie. With the assistance of Mrs. Harry Fisher, advisor, we selected proper music and worked with the scripts. After several revisions, we recorded the scripts and music and timed the audio portion in perfect timing with the orientation film.

RESULTS AND RAMIFICATIONS: We completely finished the film approximately two days ahead of the deadline. After showing it at several high school orientation programs, we realized that a couple of revisions and additions would be necessary later in the year. We plan to make an addition to the scope of the film since it does not include aspects of school which occur primarily in the spring. Even without spring activities, the film is a tremendous asset to the Orientation Program.

MEMBERS OF ESP II:
Wayne Beasley
Mary Ann Baysden
Reid Brady
Len Gibbs
Clyde Harvell
Randall Parker
John Renfrow
Dickie Spears
Terry Walker
Mrs. Robert Windsor, Advisor
Mrs. Harry Fisher, Advisor

THE HANDICAPPED CHILDREN AT MOREHEAD CENTRAL SCHOOL

Linda Baker
Jackie Granger
Connie Guthrie
Cindy Hendrick
Joanie Huffman

HANDICAPPED CHILDREN AT MOREHEAD CENTRAL SCHOOL

The five of us decided to take on this project to see what was being done for the handicapped children in Carteret County. We found out that there was a class at Morehead Central for handicapped children. This is a trainable class whose program is designed to meet the needs of boys and girls with I.Q.'s between 30 and 50.

There are some 14 children in the class with which we are working. The room seems to be well equipped and well lighted. It generally presents a very pleasant atmosphere for learning. The types of handicaps in this class are mongoloids, brain damage, epilepsy, cerebral palsy, emotional disturbances, and rubella.

In order to understand our children better, the five of us interviewed some of the parents of the handicapped children. These parents helped us by telling about when they first discovered that their child was handicapped, what tests each child had to take to determine his type of handicap, and what, if any, special problems are presented by having a handicapped child in the home.

Three of us also interviewed Mrs. Kittrell, the President of the Handicapped Association in Carteret County. She talked with us about the work of the association and also of her own experiences as the parent of a handicapped child. Also Mrs. Kitrell and another member of the association, Mrs. Styron, agreed to visit our ESP class and discuss the handicapped child with the group.

On Tuesdays and Thursdays, we go to Morehead Central to observe and work with the children. Most of the time we help them with their lessons, such as writing numbers, words, and learning how to color. The children also have a play period, and we help them play. When the children play with the toys it is in some way helping a part of their body. We help them practice for fire drills also. There are two teachers in this class of fourteen, one of whom is really a teacher's aid.

The ESP staff gave us information on this topic. Also we have done much individual research from the library and have used some films from the North Carolina Board of Health. Each of us has chosen a special topic to do in depth research on. Those topics relate to the types of handicaps that the children have. We wrote on Rubella, Cerebral palsy, mongoloids, epilepsy, and brain tumors.

From our work with this class, we have found out what is being done to aid these children in this community.

The students working on this project are Jackie Granger, Joanie Huffman, Cindy Hendrick, Connie Guthrie, and Linda Baker.

To conclude our work, we are presenting a display at the ESP Fair to illustrate our work and to inform the public about this class. Also we will compile all of our information into notebook form to be left with the ESP staff for reference next year.

THE HARVESTING AND DESTRUCTION OF THE COMMERCIAL OYSTER IN CARTERET COUNTY

Arnold Gibat

THE HARVESTING AND DESTRUCTION OF THE COMMERCIAL OYSTER IN CARTERET COUNTY

by

Arnold Gibat

ABSTRACT. In starting this project in Environmental Studies I was curious about what I was eating. I started studying the oyster. My plans were to just learn more about the commercial oyster, Crassostrea virginica, including the harvesting and destruction of this economically important shellfish.

Mrs. Spitsbergen agreed to be my advisor on this project. She gave me a list of people to contact such as Dr. A.F. Chestnut (director of the UNC Institute of Marine Sciences and an oyster expert) and Mr. Dennis Spitsbergen (research biologist with the N.C. Division of Commercial and Sports Fisheries). After contacting Mr. Spitsbergen, I was referred to Mr. Fentress Munden, oyster biologist with the Division, and was told that he would be the one who could give me the most help.

Mr. Munden's primary work is research on the oyster, and includes efforts to improve its availability and abundance for the commercial fishermen. Mr. Munden agreed to assist me on my project. Our work together resulted in great personal and educational success to me. The information and help he furnished could be found nowhere else. The material he furnished was data obtained through his own research.

Upon completion of my project Mrs. Spitsbergen told me that Mr. Munden needed an assistand and helped me in getting the job. It has been an interesting experience.

As a result of my studies on the oyster, I gave a seminar in the ESP class on the life cycle of the oyster, research efforts to improve its harvesting and problems involved in the destruction of oyster beds. I am now writing a paper on the project.

The ESP class, the teachers and advisors have certainly been a great help. Through them, school has taken on new meaning, and I may possibly be on the way to a career in biology.

THE OCCURRENCE AND TREATMENT OF VENEREAL DISEASE IN CARTERET COUNTY

Cathy Oliver
Linda Bell
Dianne Jones

THE OCCURRENCE AND TREATMENT OF VENEREAL DISEASE IN CARTERET COUNTY

by

Cathy Oliver
Linda Bell
Dianne Jones

ABSTRACT. In deciding on this project we tried to find out the reasons for the widespread occurrence of venereal disease, and we wanted to learn more about the ways in which this disease is spread. Our final objective was finding out what services in Carteret County were offered to combat, control, and treat the disease.

We started working on this project at the beginning of the school year. The ESP staff helped us by recommending people to contact and advising us as to steps in going about talking to them and carrying out an interview.

Our first step was to contact the Carteret County Health Department to gather information and sources. There, Mrs.Lewis, head supervisor of the Health Department, was interviewed by our group. She later referred us to several other people. We talked with Mrs. Ann Rady, formerly with the Health Department, who discussed the problem with us and later gave a lecture on venereal diseases to the ESP class. Mr. Leon Mann, head of the Community Action in Beaufort, was contacted and interviewed. He works with the Health Department by making available information on the occurrence of venereal diseases, numbers of persons with the disease, and procedures of treatment for cure of the disease. From these sources we received much information that helped in our project. We also ordered films on this subject to be shown to the ESP class.

In our conclusions from this whole project work, we think we made a lot of progress. We had gathered a great deal of information, and we think a lot of students learned from this project and would know more about what to do if faced with this problem. Our final presentation was a written paper.

THE OPERATION OF THE U.S. POSTAL SERVICE

Mary Ann Baysden

THE OPERATION OF THE U.S. POSTAL SERVICE

by

Mary Ann Barsden

ABSTRACT. The purpose of this project was to learn about how the Postal Service operates.

This project was begun at the suggestion of Mrs. Kathy Windsor (Environmental Studies Project teacher).

I received a lot of background information from The Encyclopedia Americana and the Britanica Encyclopedia. I ordered some pamphlets from the Superintendent of Documents, Washington, D.C. I talked with Mr. Wade Pellitier, Morehead City Postmaster who also gave me many pamphlets on the services of the Postal System.

I have also talked with Mr. Odell Merrill, who also gave me some pamphlets on the operations of the Postal System.

In the beginning of this project I had hoped for a tour of a post office for the class, but this area's postal facilities were too small. After compiling all my information, I wrote a nine page report on the operation of the United States Postal Service.

THE SEA-GOING TUGBOAT
MARJORIE McALLISTER

Reid Brady
Clyde Bass

THE SEA-GOING TUGBOAT MARJORIE McALLISTER

BY

Reid Brady
Clyde Bass

Our primary intention was to expose reasons, heretofore unexplained as to why the sea-going tug, Marjorie McAllister, sank. It was also our intention to compile a report on the history of the tug, including a photographic survey of the wreck, indicating possible causes as to why the tug sank, and an analysis of personal and public opinions concerning the sinking of the tug. Included also in our analysis will be a coverage of the qualification and seamanship backgrounds of the operating personnel at the time the tug disappeared, and an analysis of the feasibility of this type of commercial tugboat for use under ocean conditions.

We obtained information on the tug's size, power, cost, crew, and information on weather conditions at the time it sank. After interviewing the divers who discovered and photographed it, we were able to secure a fairly accurate description of its present condition.

After securing an underwater camera and scheduling a few more interviews, we plan to dive the tug sometime in May. We also intend to compile a report on our findings.

TUTORING AT NEWPORT ELEMENTARY SCHOOL

Debbie Trigleth
Debbie Willey

TUTORING AT NEWPORT ELEMENTARY SCHOOL

by

Debbie Trigleth
Debbie Willey

ABSTRACT. One afternoon after school we were visiting Newport Elementary School. We were walking around in the primary building when Mrs. Mary Katherine Millis invited us into her first grade class. We were talking about the Environmental Studies Project and how we needed a new project because the one we had concerning a Humane Society in Carteret County was not working out too well. She asked us if we would like to come to help her with her slow learners. We thought this was a pretty good idea for an "action" project, because we thought we would not be able to do any research if we used it for a research project. We brought the idea back to Miss Brandon, our project adviser, and she thought we should use it for a research project. She gave us a list of educators such as Piaget, Maslow, and John Holt to read about and to do research on. She also gave us other books to read. We have not done any research on these men, but we have read quite a few books. We have read How Children Fail by John Holt, Our Children Are Dying by Nat Hentoff, Hooked On Books by Daniel N. Fader and Elton B. McNeil, and are in the process of reading The Open Classroom by Herbert Kohl. We write reports on the books after we finish reading them and turn the reports in to Miss Brandon.

We go to Mrs. Millis's class on Tuesdays and Thursdays. At first we were supposed to help only the slow learners, but we found that the other children were jealous and wanted our attention. The first day we were there, Mrs. Millis had one of the students (who knew us) introduce us to the class. She made a big deal out of our names being the same and about how the class would have to find some way to distinguish us from one another. So they decided to call us Debbie and Debbie T.

Miss Brandon thought that keeping a journal of what we do when we go to Newport might be a good idea. We have kept up, and are glad we keep the journal because we refer back to so many things and we can look to see what day we did what.

Sometimes we do extra little things like make cookies or popcorn. One day we made no-bake cookies. It was not only fun, but the children learned some things. They learned how to measure and read measurements, they learned to read a recipe, and they also practiced counting. Every child got a chance to stir the batter even strokes, and all the children counted each stroke out loud.

There are four students with whom we work more than anyone else in the class. Most of the time on Tuesdays we help them with their reading and make sure they know their alphabet and numbers. On Thursdays we try to share out time with the whole class. Sometimes we have a science class, sometimes we use the overhead projector to help them learn how to tell time or learn the difference between sizes.

We have visited other first grade classes in the community ... one at Camp Glenn and two at Newport Elementary. We have used some of the things we learned in those classes to help us in Mrs. Millis's class. Every class is different and every teacher uses a different technique for teaching. We both think that Mrs. Millis is the best. She has the most disciplined class we've seen, yet she never shouts at her students because she says that makes them think they can shout also. She has helped us so much. We don't know what we would have done without her.

Of the ESP staff, Miss Brandon has really helped us. She has gotten us books to read and has taken us quite a few places. She also hasn't ever tried to rush us with anything. She just lets us take our time and do just about anything we want to learn more about our project.

Our project isn't finished yet, and we don't know exactly what our finished product will be. We've taken pictures to go along with our journal. The journal and the pictures will be the only things that we can leave behind us for further use.

VEGETATION STABILIZATION PROGRAM AT THE FORT MACON STATE PARK

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by

Margaret Garner, John Van Horn, Charles LaSpada, Bill Leary and Clyde Bass

INTRODUCTION. Fort Macon is the most heavily visited park in North Carolina; visitation figures averaging 500,000 people per year. This park is located on the extreme east end of Bogue Banks. It is noted for two things: The restoration of old Fort Macon, a Civil War fort, and the fishing, swimming beaches and picnic areas (Figure 1). The park, therefore, is visited for three primary resources: Swimming, beaching and picnicking, fishing, and the fort. Because of the growing number of people visiting the park each year,

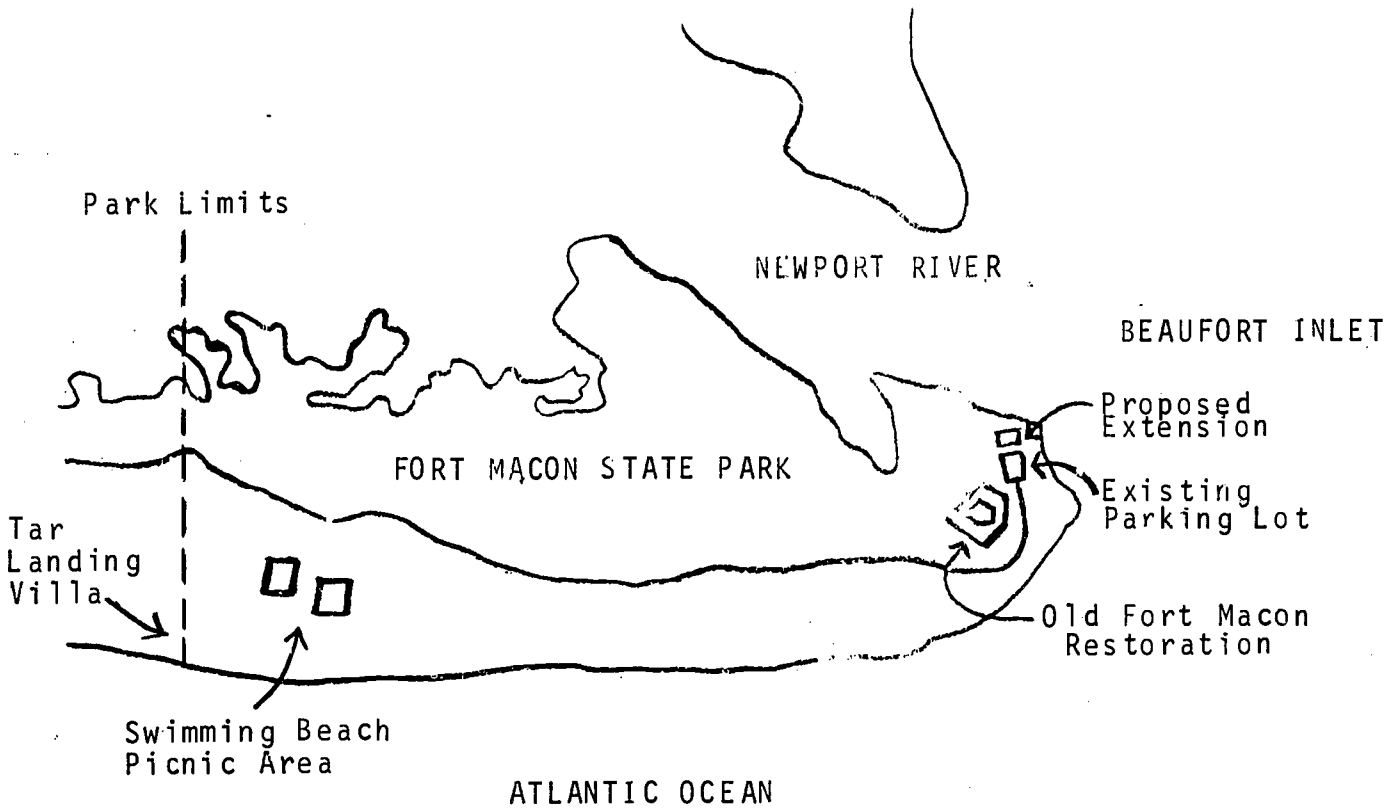

Figure 1. Fort Macon State Park showing location of restored fort, swimming and picnicking area, and proposed parking lot expansion.

there is a need to extend the parking lot at the fort. In order to make such an extension, the area north of the present parking lot must be cleared and the dunes and vegetation altered or destroyed. After the area is paved for the new parking lot, the sand and dunes area around it must be re-stabilized, or the parking lot could be eroded by water and heavy wind damage to surrounding sand dunes (Figure 2.)

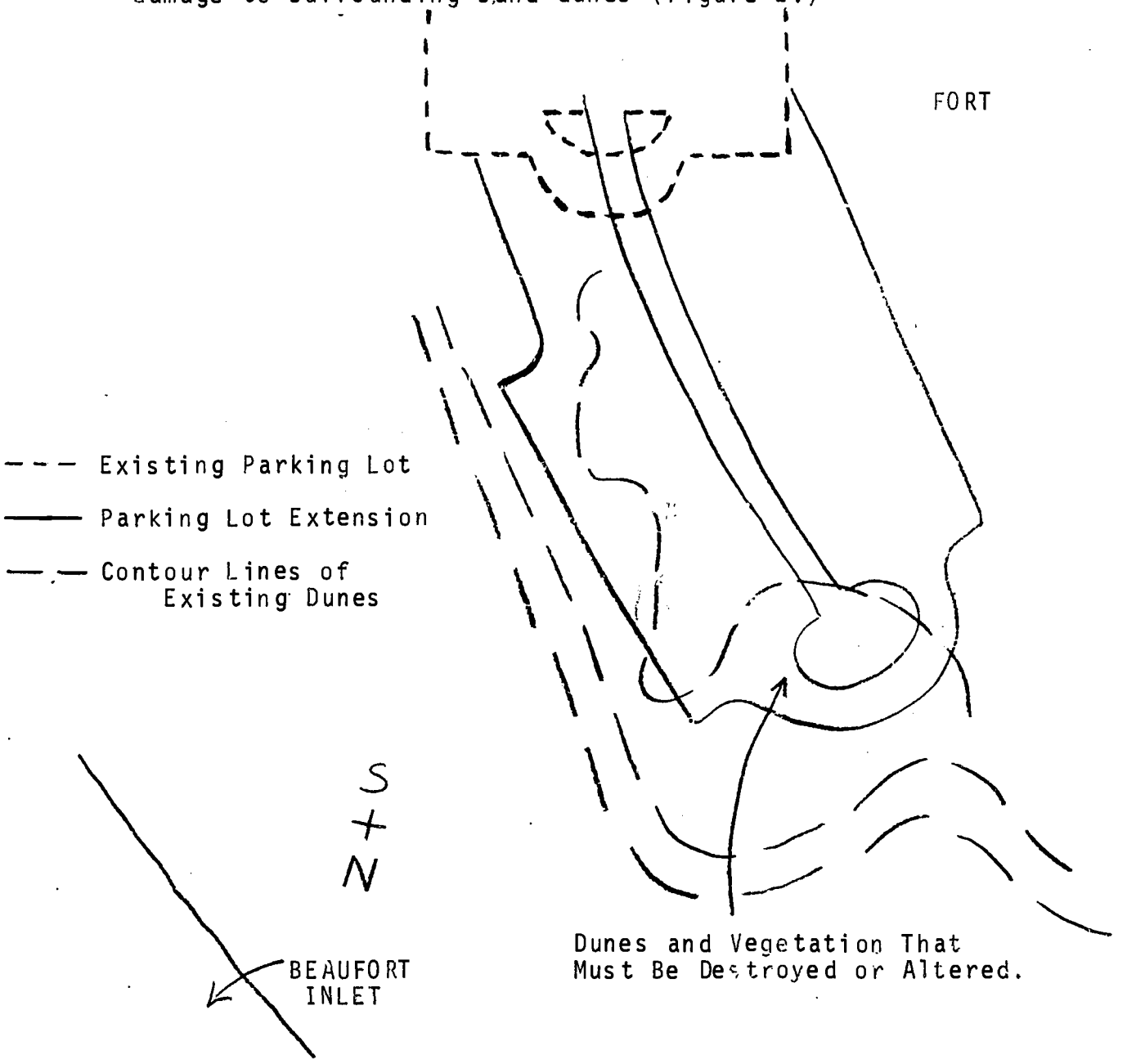

Figure 2. Parking lot extension and effect on alteration or surrounding dune areas.

We cleaned the beach area from the Coast Guard Station to the rock jetties, and cleaned inside the fort. In January, the Park officials still were unable to obtain beach grass plants. We, therefore, decided to take plants from the swimming beach area, which had heavy beach grass growth, and to transplant them at an unvegetated, blow-out on a primary dune in the area of the swimming beach to the east of the Tar Landing Villa (Figure 3). The grass chosen was Salt Meadow Hay (Spartina patens). Efforts to re-plant at the parking lot area were

A = Location of heavily vegetated area from which Spartina was taken

B = Blow-out area on primary dune where grass was planted

C = Tar Landing Villa

D = Swimming beach

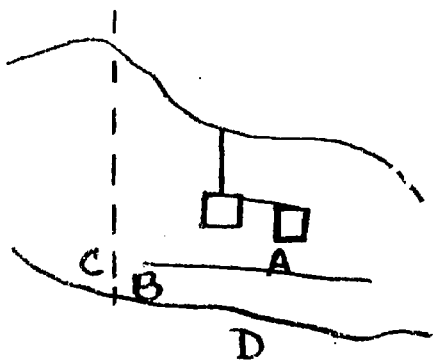

Figure 3. Location of transplanted grasses at the swimming beach.

discontinued, since the necessary environmental impact statement concerning the project was being prepared and the actual paving would be delayed.

RESULTS AND RAMIFICATIONS. We learned the importance of stabilizing our outer banks system if it continues to be a growing resort area. We became acquainted with various types of beach grass and how to transplant and maintain them as stabilizers of sand.

In all, the project took six months for completion, because of the delay in planting. In the meantime, however, we had the clean-up project as an ESP "action" project, and were able to use the time gathering additional information.

Ordinarily, the beach and dune areas in the park are altered or destroyed by two means: The many people at the park tramping over the dunes, and the natural processes of beach erosion and wind damage, etc. The officials at Fort Macon State Park constantly are concerned with stabilization of the fort area and the swimming beach area. In previous years, beach grass has been planted by park officials and a sand fence has been put up on the dunes. Both are methods of stabilizing the sand.

Our project, as ESP students, was to plant beach grass at the altered areas of the new parking lot and at other unstable areas at Fort Macon.

PROCEDURES. To begin work on our project, we had to gather much information such as kinds of beach grass, when to plant, how to plant and fertilize, etc. The first step we took was to contact authorities. We interviewed Mr. Spence, local agent for the Department of Agriculture, and obtained material from him. Our project group and other interested members of the ESP class went on a field trip with Mr. Karl Graetz (Plant Materials Specialist with the State Conservation Service) and Mr. James B. Willis (member of the Carteret County Economic Resources Council). They showed us different types of beach and dune erosion and different types of beach vegetation, along with pamphlets naming the various types of beach grasses and their effectiveness as stabilizers of dune areas. Additional material was made available to us by the ESP staff. We wrote to Dr. Robert Dolan at the University of Virginia for pamphlets on "Dune Stabilization and Beach Erosion", "Beach Erosion and Beach Nourishment", and "Man's Impact on the Outer Banks of North Barolina" by Dr. Dolan and Dr. Paul Godfrey (naturalist with the Cape Lookout National Park Service). These pamphlets traced the history of stabilization efforts on the North Carolina coast. In addition to this, Mrs. Spitsbergen and Mr. James Willis gave seminars in class on beach erosion.

We next contacted Park officials, Mr. Pardue and Mr. Joyner. They discussed with us the best time to plant, locations where planting was needed, and the proper procedures of planting and maintenance of the beach grasses.

It was determined that planting had to be done in the winter months and that the plants had to be ordered from commercial sources. Since a delay in planting was anticipated, they suggested that we do a clean-up project around the fort.

Included was a meeting with the Carteret County Shoreline Protection Board during their on-the-site inspection of the parking lot project prior to issuing a permit for the alteration to take place. At this meeting we recommended that an alternate location to the west of the fort be considered for the parking lot expansion. Later, the environmental impact statement prepared by the Engineering Section of The Division of State Parks, also reviewed this alternative location, but rejected it as being economically unfeasible.

The actual transplanting and fertilization of the grass took about three weeks. The main problem involved was time... having to wait until January to plant. The plants were checked a few weeks after planting and fertilizing. The sand was beginning to gather rapidly around the plants and the plants were still living.

As a result of our project, the Shoreline Protection Board, in an effort to encourage stabilization by the individual owners of private property on Bogue Banks, without requiring legal action to accomplish this, asked us if we would be willing to continue our project. We are going to get in touch with Mr. R. P. Holden, Jr., who owns the property (characterized as an unvegetated, unstable area) on both sides of the Emerald Isle Pier, and to see if we may plant grass on his property.